



People won't use your systems? You're probably ignoring "information behavior," author Tom Davenport says. Leadership Series follows page 48

# COMPUTERWORLD

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## Users rap PeopleSoft service

► Success has firm scrambling to bolster support

By Randy Weston  
ORLANDO, FLA.

WHILE PEOPLESOFT focuses on knocking the SAP AG giant off the hill, its users want more attention from their vendor.

The Pleasanton, Calif., business process automation software firm is growing rapidly and pushing into international markets. But the growth has a price: lagging service and support for new and old customers.

"Two years ago, this wasn't an issue. But as of late, it is getting harder and harder to get answers from [PeopleSoft, Inc.]," said Don Zimmer, project leader at publishing firm Harcourt Brace & Co. in Orlando. "Last week, I called their help desk hot line, and the message system was full, so I couldn't even leave a message about my problem."

A handful of other users in PeopleSoft, page 20



Customer Ann Johnston says PeopleSoft's help desk has been slow to answer calls



Marian Peine, of General Electric's Answer Center in Louisville, Ky., was the champ in our test of consumer E-mail response times. Her score: 30 minutes

## NetPC bandwagon stuck in neutral

By April Jacobs

USERS REMAIN hopeful about the software management underpinnings promised by the NetPC, but they aren't buying

the concept of a scaled-down class of PCs.

"I just don't understand why we need another subclass of PCs for what amounts to a stripped-down PC that costs

about what I'm paying for my desktops right now," griped a vice president at a major New York bank, who requested anonymity. "The management features sound good, but I can get that now, and I don't have to put another type of desktop down."

NetPC, page 16

## Consumers www.wait for E-mail responses

Why do my cookies burn? Why is my dishwasher so noisy? Hundreds of consumers are visiting corporate Web sites to fire off E-mail queries such as those.

But response time stinks. Computerworld's spot tests found that our Web inquiries languished in the "E-mail bucket" for days before they were answered. Some companies didn't respond at all.

To stop this customer relations disaster, IS departments must exploit new technologies designed to route and manage the flood of consumer E-mail.

In Depth, page 96

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Microsoft's 4.0 users forced to buy third-party tools. Page 4

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House subcommittee votes to restrict domestic encryption. Page 12

**JAVA JUGGERNAUT**  
Business users await embedded Java to create "smart" offices. Page 17

## Warehouses grow more ambitious

By Craig Stedman  
CHICAGO

LEADING-EDGE COMPANIES hungry for competitive marketing advantages are expanding their data warehouses beyond basic transactions and demographic data.

The new frontier for Charles Schwab & Co., Sears, Roebuck and Co. and others is to capture and analyze virtually all contacts and transactions.

Warehouses, page 120

**Desperately seeking to attract customers online, companies are joining in deep partnerships on electronic-commerce projects. As Barnes & Noble's Susan Boster leads the latest tilt at Amazon.com, the start-up strikes back; meanwhile, Spree.Com drives its mail partnership online.**



The Internet, page 49

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## REPORT

## Java drama

**S**un Microsystems' efforts to achieve international standards status for Java puts it in the difficult position of having to choose between what's best for its customers and what's best for Sun.

Sun has asked the International Standards Organization to endorse Java as a standard, even though Sun won't cede control over Java development.

Sun already has been rebuffed once this year in its campaign, but it has doggedly pursued its standards agenda.

A gang of four Windows NT supporters, led by Microsoft, last week published an open letter asking Sun to, in effect, put Java in the public domain. The implied threat from Microsoft, Intel, Compaq and Digital is that if Sun doesn't give up control of Java, the companies will devote their substantial resources to pushing Microsoft's competing Java initiatives.

The move up the ante in the Java wars and puts Sun in a quandary. Sun must do what's best for its shareholders, which is to try to make as much money as it can by controlling the standard, but it's impossible.

For customers, a public-domain standard is the better of two evils. But it is almost certainly not what they will get. Sun has no choice but to keep Java in-house. Some revenues, after all, is better than none.

Surviving an unlikely ISO endorsement, Sun will have to slug it out in the market, as Microsoft did with Windows. But Sun must deal with a competitor Microsoft never had — namely, Microsoft. This promise to be a down-out effort, with customers stuck in the middle as the scene plays out.

Paul Gilin, Editor  
Internet: paul.gilin@cw.com

## THE FIFTH WAVE

BY RICH TENNANT



"I heard you say you needed a new Web browser. Andy, and I thought old grumps could help out. But dang if I can find one that'll work!"

E-mail: Rich.Tennant@theywaweb.com

# AT&T spins off 5K IT staffers

## Deal with sibling unit may cut costs

By Jeykumar Vijayan  
and Matt Hamblen

AT&T CORP.'s megacontract with its outsourcing subsidiary last week could deliver better services and lower costs to internal users of its information technology services.

The deal also is expected to significantly boost efforts by AT&T Solutions to become a major player in the services and systems integration business.

In a move that already is being described as one of the biggest of its kind, AT&T is integrating its entire internal computing and network infrastructure — including 5,000 employees — into the year-old AT&T Solutions.

Under the open-ended, multi-year deal, AT&T Solutions will handle all of AT&T's internal voice, data and image networking services.

### RIG JOB

The company will service all networked computing, desktop, server, LAN management and data processing services for AT&T's mainframe and enterprise server users.

The moves are part of a corporate-wide effort to trim spending by as much as \$2.6 billion by next year, analysts said.

AT&T last week refused to divulge the dollar amount of the deal, but analysts said it will run into billions of dollars over the next few years. Some indications of its scope: AT&T Solutions will manage more than 10,000 MIPS of processing capacity, more than 2,300 Unix servers and about 120,000 desktop computers for AT&T.

"Though there are likely to be some initial [transition-related] wrinkles, the transfer of service

Corporations also save costs from the centralized procurement and infrastructure consolidations that such arrangements usually entail, analysts said. AT&T will lay off about 1,000 of its IT staff by 1999.

Last week's move also greatly strengthens the services portfolio of AT&T Solutions. Formed in early 1995, the company already has a number of major clients, including J. P. Morgan & Co., Mastercard International.

### AT&T OUTSOURCES TO AT&T

What's being outsourced: AT&T's internal computing and network infrastructure services, including all voice, data and image networks, mainframes, Unix servers and desktop PCs.

What isn't: Application development and planning services.

Value of contract: Estimated at billions of dollars over the next few years.

from an internal ISO organization to a formal service provider usually results in increased responsiveness" and lower costs for user departments, said Susan Scrapecki, editor of the "IT Services Letter" and vice president at Technology & Business Integration, Inc. in Woodcliff Lake, N.J.

That's because outsourcing arrangements such as AT&T's typically result in better operating efficiencies from things such as centralized administration, installation and service.

Inc. and United HealthCare Corp.

The integration of AT&T's IT unit will result in an infusion of more than 5,000 staff and a sophisticated networking and computing infrastructure.

"AT&T is putting together a business model where they want to go to market with all the terrific resources they have internally," said Allie Young, an analyst at Dataquest in Westboro, Mass. "In AT&T Solutions they have a ready-made front end," she said. □

## Sun: Letter from key rivals won't jolt Java strategy

By Sharon Gaudin

SUN MICROSYSTEMS, INC. won't be deterred by a letter from four industry giants asking the Mountain View, Calif., company to cede control of the Java standardization process.

"These are the issues we've been dealing with in an open, good-faith manner for months," a Sun spokesman said. "We've been discussing them at an international level. We're not sure why they chose to send this letter out to the media to communicate this again."

### TOO MUCH CONTROL

In a letter that Sun received late last week, Microsoft Corp., Intel Corp., Compaq Computer Corp. and Digital Equipment Corp.

asked Sun to cede control of the Java language to an international standards-setting organization. They expressed concern that Sun, which developed and

owns Java, had too much control over the language.

The Sun spokesman said the company won't respond directly but will submit formal comments to the International Standards Organization (ISO) within the next few weeks. The ISO is determining whether Sun will be the main contributor of Java standard specifications. □

# Going flow

with the

Implementers talk about their huge workflow

www.computerworld.com/go/flow

Workflow development tool required

www.computerworld.com/go/flow

## Novell to offer safety course for GroupWise

By Barb Cole-Gomolski

NOVELL, INC. this week will highlight plans to bring some much-needed security to Internet-based collaboration.

At a Sept. 17 press event in New York, the company is expected to outline plans that could help users of its GroupWise messaging system exploit the Internet more safely, sources said.

The company will highlight how GroupWise can be used with BorderManager, another Novell offering that handles security on intranet applications. BorderManager could be used, for instance, to keep the contents of a threaded discussion from leaking outside a corporate firewall. That capability is especially important because Novell plans to add a document publishing capability — code-named Jefferson Project — to GroupWise.

The company also is expected to announce that it is shipping GroupWise 5.1. It will support key Internet mail protocols, including Post Office Protocol 3 and Internet Message Access Protocol 4, which make it possible for sites to deploy World Wide Web browsers as mail clients.

Version 5.1 also will include new document management and workflow capabilities and a new administration tool called

GroupWise Monitor.

Novell declined to comment on the announcements.

Greg Arnette, a senior consultant at Symaxis, a consultancy in Needham, Mass., said the announcement will be well-received among his clients that use GroupWise. GroupWise users currently can access their electronic mail over the Internet, but it isn't as secure as many would like, Arnette said. The addition of the BorderManager services should put those security-minded companies at ease, he said. □

## Life beyond

To retain critical year 2000 staff at Penn Mutual Life Insurance Co., Sue Kozik, vice president of IT, stresses the support staffers already have and the career gains they will make for staying. Our IT Careers special report finds there are growing opportunities in the midst of year 2000 staffing adversity. Page 100



## EMC update designed to ease warehouse growing pains

By Tim Ouellette

EMC CORP. this week will announce a software update that could alleviate some of the storage headaches associated with data warehousing.

The Hopkinton, Mass., storage vendor will ship Symmetrix Multi-Index. The facility (SMITF) 1.1, the latest of several software tools EMC has developed to build more features and functionality on top of its Symmetrix disk arrays.

SMITF, which originally shipped late last year, uses Symmetrix's high-speed, proprietary data channels to move data



between mainframe systems and Unix servers.

The software has mainly been used to speed the process of stocking Unix data warehouses with mainframe data — without bogging down the network.

Analysts said early data warehouses were smaller and easier

to handle. But as they grow, more data is being shipped over the network to data warehouse servers.

### WHO HAS LICENSES

EMC officials said most SMITF licenses have gone to sites in the banking and telecommunications industries, which created large data warehouses or off-loaded mainframe processing to high-end Unix servers.

In SMITF 1.1, EMC added support for three high-end Unix

platforms that typify that kind of use. They include Sequent Computer Systems, Inc.'s Symmetry and Natus-Q, Digital Equipment Corp.'s Alpha and NCR Corp.'s WorldMark servers.

SMITF already supports the movement of data between IBM S/390 mainframes and IBM, Hewlett-Packard Co. and Sun Microsystems, Inc. Unix servers.

SMITF 1.1 ranges in price from \$30,000 to \$65,000. □

## HP plays both sides of fence; unveils NT, Unix workstations

► Kayak family features 2-D, 3-D technology

By Jai Kumar Vijayan

HEWLETT-PACKARD CO. last week launched a two-pronged attack on the workstation market with a range of systems targeted at Unix and Windows NT users.

The Palo Alto, Calif., company last week unveiled its Kayak PC workstation family based on Windows NT. The line runs Intel Corp.'s Pentium II chip and features graphics capabilities migrated from HP's Unix workstation family.

The systems range in price from \$2,350 to \$7,760. They

feature HP's Visualize two- and three-dimensional graphics technology, dual-processor support and an Intel-based system architecture that speeds performance through a 533M bit/sec. communications link between the memory, CPU and graphics engine.

### UNIX UPDATES

HP also beefed up its Unix technical workstation lineup with new B-class and C-class systems that feature its latest PA-RISC chips and better graphics capabilities at lower price points. □

HP's announcement came a few days after its other Unix-only vendor Silicon Graphics, Inc. said it plans to bring out a new line of NT workstations (see story, page 32). Other vendors with Unix product lines, such as Digital Equipment Corp. and Intergraph Corp., also have added NT workstations to their lineups.

Their combined efforts have succeeded in delivering new graphics capabilities in the low to mid-range PC workstation space, while sharply driving down Unix workstation prices.

"It is going to be a challenge for Unix to remain viable in the [low end]," said Rex Hays, a design engineer at Eastman Kodak Co.'s advanced development product group in Rochester, N.Y. "But NT still doesn't have any of the robustness or reliability I need at the high end." □

By Sharon MacIsaac

THE INTERNAL REVENUE Service needs \$600 million more than previously forecast to fix its year 2000 problems, a spokesman said last week.

The earlier estimate was based on a standard formula of \$2.70 per line of code that needs fixing. But the IRS discovered this summer that simply repairing code won't solve some year 2000 problems. Instead, entirely new software is needed for some applications, which in turn will require new hardware, according to a statement by Robert Albicker, the agency's deputy chief information officer.

"It's typical IRS," said a spokesman for Rep. Bob Portman (R-Ohio), who co-chairs the National Commission on Restructuring the IRS. "It confirms what we've been thinking

all along."

The IRS has come under heavy criticism for computer problems over the years, including a trouble-plagued modernization effort that critics said wasted billions. Some fear that the IRS started working on the year 2000 problem too late.

The latest projected cost for year 2000 work at the U.S. Department of the Treasury, which includes the IRS, has now hit \$1.1 billion.

Overall, the estimated year 2000 cost to the federal government has soared more than \$1 billion since the previous forecast last May, which was \$2.8 billion. Private analysts criticized that figure as unreasonably low. □

Hong Kong government  
views financial firms for  
year 2000 compliance. Page 44



Java banking will help Bank of America retain, recruit users, Isaac Applebaum says. The Internet, page 49

Condo Lintley says a good offense is the best defense against raising in IS. Managing, page 90

Ken Alfonso says burying this brought out today for funeral company. The Enterprise Network, page 55

## Users to Microsoft: NT 4.0 still needs work

By Laura DiDio

THIS YEAR's freedom at Microsoft Corp.'s Professional Developers Conference in San Diego next week will be a beta copy of Windows NT 5.0. But users are far more interested in filling in the gaps in Windows NT 4.0.

Eight Fortune 1,000 users contacted by Computerworld said they are less concerned with Microsoft's classic ship dates for NT 5.0 than they are with Microsoft's failure to deliver backup management and resources in NT 4.0.

"I'd rather Microsoft let the delivery date of NT 5.0 slip and get it right," said Richard Schell, vice president of information systems at the ABC Television Network Group in New York, which has 140 Windows NT Servers.

"There are several components, like defragmentation and support for disk quotas, that should have been included in NT from Day 1," he said. "Not having them presents us with big integration issues."

installed just one copy of each of the top five third-party Windows NT management utilities, it would cost at least \$5,000," Spowerman said.

Scott Rackliffe, vice president of information services at Farm Credit Banks in Agawam, Mass., said Windows NT 4.0 simply doesn't have "enough industrial-strength tools."

"We buy third-party products to fill the gaps. But if Microsoft wants NT to become an enterprise operating system platform, they have a long way to go," Rackliffe said.

There's a good reason Microsoft has left out so many basic management utilities in Windows NT



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— Scott Rackliffe,  
Farm Credit Union

### THE GAPS

Stu Spowerman, executive vice president of Sun Belt Software Distribution, Inc. in Clearwater, Fla., agreed.

He identified six major gaps in Windows NT 4.0 functionality — all of which are available as optional products from third parties. They are disk defragmentation, support for disk quotas, remote control, advanced fault-tolerant disk mirroring, support for home directories and advanced security.

Mike Nash, Microsoft's Windows NT director, said the company will bundle most of those items free in Windows NT 5.0, but not before that release.

"These are important issues, and we're working on them. But other functions, like the Active Directory, are higher priorities," he said.

Spowerman and other users said although the third-party software offerings are functionally complete, they raise the cost of owning a Windows NT network and add layers of complexity to network configuration.

"If, for instance, a business

5-31 and 4.0, said Mark Minasi, president of TechTrend International in Arlington, Va.

"If they did release a major NT 4.0 upgrade with all the missing functionality [included], no one would migrate to Windows NT 5.0," Minasi said.

That is small consolation to users such as Scott Krall, network administrator at Weyerhaeuser Co., a paper manufacturer in Valley Forge, Pa.

Krall said he is "aggravated that Microsoft keeps having drive rehearsals for Windows NT 5.0" but fails to buttress the basic functionality of Windows NT 4.0.

"I'm spending up to 40% more time managing my network in terms of installing third-party solutions, debugging them and ensuring that they interoperate with NT," he said.

"It was rare for a 3.5 server to crash. I only had about two hours' downtime a year. With NT 4.0, I'm averaging about two hours of random downtime each month," he said. □

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## LOOKING FOR A FASTER WAY TO LOAD YOUR DATABASE?

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# WorldCom deal raises hope of service boost

► **CompuServe carved up; content goes to AOL**

By Matt Hamilton

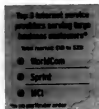
WORLD.COM, INC. in Jackson, Miss., grabbed up a sizable chunk of the worldwide Internet backbone last week — a move that could eventually position it to offer more services to business customers at competitive rates.

For business users, the deal also could bring closer to reality the elusive concept of service guarantees for Internet connections, observers said.

Analysts said Internet service guarantees are still in their infancy, but WorldCom would gain one network provider out of last week's deal that already is making strides with service guarantees: ANS Communications.

In the deal, which took six months to put together, WorldCom will plunk down stock worth \$1.4 billion to buy Columbus, Ohio-based CompuServe Corp.'s high-speed networking division. WorldCom also cut a deal with Vienna, Va.-based America Online, Inc. to swap America Online's Internet unit, ANS Communications in Elmhurst, N.J., for CompuServe's subscriber base and content (see FAQ box at right).

"WorldCom is focusing on business customers" with the deal, said analyst Don Merriman at Giga Information Group in Cambridge, Mass. For example, the deal gives WorldCom integration and business consulting services from CompuServe and enables the service provider to use ANS's abilities to build secure firewalls for business customers, analysts said.



Source: Giga Information Group, Cambridge, Mass.

But WorldCom officials wouldn't comment on the specific services the company would offer business users once it clears the four- to six-month approval process by the government and stockholders.

WorldCom user Andrew Stratford, a vice president at Congress Financial Corp. in

New York, said he was worried that "no matter how well-conceived, any kind of merger will cause confusion for customers in billing and services and the so-called extras they promise."

## LOWER COSTS IN OFFING?

Although the deal gives WorldCom a larger chunk of the Internet's bandwidth, it won't necessarily mean lower monthly costs for business users right away. But as a service provider's network grows, it can be used more efficiently, which means lower costs for the provider, analysts said. That means network administrators might push WorldCom or its competitors for lower monthly costs to hook up a line or insist on a quality of service contract.

WorldCom subsidiary UUNET Technologies, Inc. in Fairfax, Va., offers quality of service guarantees. But Eric Paulak, a Gartner Group, Inc. analyst, said ANS has made better inroads with quality of service than UUNET during the past year.

ANS offers guarantees of 90 msec to make a connection and 99.9% uptime, with a reduction in a monthly fee based on an extended outage, Paulak said. Some providers give a refund of up to 25% of a monthly fee for

# FAQs: Anatomy of a megamerger

## Q: What are the basics of this deal?

A: WorldCom acquires CompuServe in a stock-for-stock transaction worth \$1.2 billion. CompuServe's assets will be carved up between telecommunications and Internet service provider WorldCom and online service provider America Online through a swap of sorts. WorldCom will get ANS, an America Online company that provides bandwidth access. America Online takes \$75 million in cash and CompuServe's Interactive Services Division, which encompasses its subscriber base, content and interface technology.

## Q: What effect will that have on WorldCom?

A: Analysts said the purchase of ANS secures WorldCom a leadership position as the top Internet infrastructure and online scores provider to businesses.

## Q: What's the impact on Microsoft Corp.?

A: UUNET Technologies, a WorldCom Internet infrastructure subsidiary, serves The Microsoft Network, which is the second-largest consumer online service after America Online.

## Q: What happens to CompuServe customers?

A: The CompuServe brand name will be maintained as an America Online Internet service for businesses.

## Q: What about America Online?

A: America Online will purchase Internet infrastructure from WorldCom for five years.

several hours of downtime.

WorldCom's biggest move toward the corporate Internet customer was arguably its December purchase of UUNET and its 50,000 corporate customers as part of a \$14 billion purchase of MFS Communications Co. Indeed, WorldCom is seen as a company building its business by acquisitions, having bought

50 businesses in more than a decade.

The U.S. Justice Department announced it will review the deal's anticompetitive aspect, but WorldCom officials and analysts said they doubt it will matter. There are 4,000 Internet service providers and plenty of competitors to share a \$2 billion market. □

# Java not on database user menu at the moment

By Craig Steinman

EVERYBODY IS TALKING about Java in the database, but no one is doing much about it yet.

Several users said the idea of writing code in Java has appeal because it would make database functions portable and reduce reliance on proprietary programming languages.

But that is a long-term view, the users said. For now, their companies aren't eager to put Java to the test in performance-intensive database applications.

"We'll jump on the bandwagon when it looks like it knows where it's going," said Justin Toner, a staff engineer at an Idaho Falls, Idaho, environmental engineering laboratory that Lockheed Martin Corp. runs for the federal government.

The laboratory, which monitors a collection of government facilities that process nuclear fuel and other hazardous materials, is doing some initial Java development work at the client level.

Database support for Java could become key as the laboratory moves to a three-tier approach and looks to pass application logic back and forth between servers and thin clients, Toner said.

## STEPPING CAUTIOUSLY

But laboratory officials are waiting for performance and stability improvements and for the Java turf war between Microsoft and everyone else to run its course. "When you're dealing with enterprise applications, and even a small mistake can

really impact you, you try to avoid high-risk steps," Toner said.



"Performance would be a concern because that's one of your highest priorities"

Faced with that wait-and-see attitude, database vendors aren't falling over themselves to get Java into their enterprise software.

For example, Sybase, Inc. plans to beta-test Java with the mobile version of its Adaptive Server database this fall.

But the promised delivery of Java for Sybase's mainstay Adaptive Server Enterprise database was pushed back to the second half of next year. That was done so the Emeryville, Calif., company can speed up the addition of more-in-demand support for row-level data locking, which the enterprise database needs to run packaged applications.

Oracle Corp. in Redwood Shores, Calif., said server-level Java support also probably won't show up in its Oracle8 database

until late next year.

IBM's DB2 already can handle Java programming, but Herschel Harris, IBM's manager of database technology, said most users are still just kicking the tires for now.

Dunlop Tire Co. isn't even going that far, at least with Oracle databases. Dunlop uses Java tools to build some pieces of upcoming intranet and extranet applications, but it doesn't have any short-term database plans for Java, said Hugh Allan, manager of information technology at the Amherst, N.Y., tire maker.

Although Java could free database developers from proprietary languages, Dunlop still wants to leverage its investment in Oracle's PL/SQL for "the next year or two," Allan said. Switching to Java "would be a pretty big jump" for his developers and require new training, he said. □



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## Showdown at the PC corral

FRANK HAYES

**W**ELLS FARGO & CO. is finding out what happens when you take away users' desktop computers. And what's going on at the bank with the trademark stagecoach should make you nervous if your plans call for network computers.

Maverick users are ready to string up IS. Outlaw PCs are holed up where the sheriff can't find them. And the next time Wells Fargo wants to make a system change that requires user cooperation, it may take wild horses to drag them along.

Welcome to the real digital frontier, pardner.

The trouble started last year when Wells Fargo merged with First Interstate Bank. Problems in combining the two banks' major systems resulted in delayed deposits, raised Federal Reserve Board payments and, most recently, a \$750 million write-off that hammered the com-

bined bank's financial results last quarter [CW, July 28].

And although customers got steamed about those glitches, users in the former First Interstate branches fumed about another result of the merger: the elimination of their desktop computers.

First Interstate originally installed the PCs to run fancy

**Outlaw PCs are holed up where the sheriff can't find them.**

slide-show presentations designed to help sell pension plans and other investment products. The bankers also used them for writing letters and running spreadsheets.

But Wells Fargo doesn't put PCs on the desks of its branch bankers. So typewriters and adding machines are now the technology du jour for typing a memo or

calculating a column of numbers.

As retro as that sounds, it's not entirely unreasonable. Many of those PCs were old and underpowered. All were at risk for viruses and software and hardware glitches. There were no corporate standards or training for using the word processors and spreadsheets — users had to muddle through as best they could.

And when the First Interstate PCs were pulled, Wells Fargo's IS shop did provide some replacement functionality — in the form of centralized, terminal-based banking applications. Bankers now have more information about customer accounts at their fingertips than ever before. And this fall, users will get intranet access to additional information and corporate procedures.

Does that satisfy users? Of course not. Without PCs, typing a memo or balancing an elderly customer's checkbook is just that much harder.

Some users have even smuggled in computers. And friendly cooperation with IS is getting to be the farthest thing from their minds.

What's that got to do with network computers and you?

If there's a single issue that can shatter your hopes of successfully putting network computers on your users' desks, it's the fact that you'll be taking their PCs

away. Not performance or functionality or cost or cross-platform Java compatibility. Solve all those problems, and you'll still be taking their PCs away.

### SERVING CUSTOMERS BETTER

Don't underestimate how much that matters to users — especially from line users. For many of them, PCs have made it possible to serve customers better. Users don't want to lose that edge in making customers happy.

So now's the time to start talking to your users about what they need — not just what they're officially supposed to need — to do their work on a network computer.

A word processor? A spreadsheet? Network computer versions of those familiar tools can go a long way toward convincing users they can live without PCs. Custom applications? Now's when you want to find out, so you have plenty of time to meet those special needs.

But no matter what they need, start looking for ways to bring some civilization to that network computing frontier. Or when the time comes, you'll be wishing you were on the next stagecoach out of town. □

Hayes is Computerworld's staff columnist. His Internet address is frank.hayes@cw.com.

## SHORTS

### Chip research gets \$250M

Three government labs have joined with major semiconductor firms to improve chip technology. Backers hope to develop microprocessors 100 times more powerful than current technology, along with memory chips that can store 1,000 times more data. The Extreme Ultraviolet Limited Liability Co., which includes Intel Corp., Advanced Micro Devices, Inc. and Motorola, Inc., will invest \$250 million during the next three years. The Lawrence Livermore National Laboratory, Sandia National Laboratories and E. O. Lawrence Berkeley National Laboratory are part of the effort.

### Windows to get speech-savvy

Microsoft Corp. announced it would invest \$45 million in Belgian speech technology firm Lernout & Hauspie Speech Products to bring voice-recognition capabilities to Windows. The deal calls for Lernout & Hauspie to develop applications for Microsoft's speech programming interface and for the two companies to form a joint venture in Europe to collect and analyze linguistic data. Microsoft also said it would invest \$35 million in a Belgium-based technology center that supports companies that work on speech-based technologies.

### DOD software piracy alleged

The Software Publishers Association (SPA) charged last week that the departments of Defense and Labor have ignored requests to rid federal government computers of at least \$227,000 worth of stolen software. A 1993 audit of 1,022 machines at the Pentagon showed that the agency runs unauthorized software on 57% of its computers, SPA officials testified. The Pentagon hasn't taken action to fix the problem, the SPA officials said. That rate is consistent with the estimated worldwide

software piracy rate of 50% but higher than the piracy rate of 28% estimated for North America.

### FBI organizes hackers watch

The FBI office in Cleveland plans to disseminate information about hacking attacks. Called InGuard, it will let members report incidents that participating Ohio organizations could act on to protect their own systems from similar attacks. The FBI will re-write the incident reports to protect victims' identities. The project, expected to start next month, is limited to northern Ohio for now, where more than 40 companies and institutions have signed up.

### Year 2000 standard in works

The Institute of Electrical and Electronics Engineers (IEEE) has proposed a standard definition of year 2000 compliance, hoping to clear up confusion among users and vendors over such terms as "properly exchange data files." Kevin Lewis, an open systems standards consultant at Digital Equipment Corp. who is leading the standards effort, said the IEEE hopes to finalize the standard by February. Another IEEE group is working to develop standard year 2000 test methods, Lewis said.

### IBM upgrades mainframe OS

IBM later this month will ship the latest release of its mainframe OS/390 operating system, which includes several Internet technology features. OS/390 Version 3, Release 4 will support digital certificates, include a built-in firewall, bundle Lotus Development Corp.'s Go Webserver and come with a completely redesigned

TCP/IP stack for improved World Wide Web performance. Additionally, IBM will ship a Java Development Kit for OS/390 later in the month.

### Microsoft protects NT name

Microsoft lawyers have sent letters demanding that third-party vendors remove references to Windows NT in their company names, product names or Internet domain name addresses. Some third parties said the action could harm their brand recognition. Stu Snowman, executive vice president at Sun Belt Software Distribution in Clearwater, Fla., said he is taking the "NT" out of his domain name ([www.sunbelt.com](http://www.sunbelt.com)). Microsoft said it has sent about 30 trademark protection letters since NT shipped in 1995.

**SHORT TAKES** Lotus, in Cambridge, Mass., delayed shipment of its Domino Go Webserver 4.6 to Sept. 19 because of a security bug. ... **Compaq Computer Corp.** this week will announce a tool that automates the management of multiple systems running Windows NT. Compaq will integrate Microsoft software from thePivot, Inc. in Houston with its Insight Manager hardware modules. ... **Threat Systems, Inc.** announced it will sell and support Catalyst software from Marinette, Inc. ... **The American Heart Association** out-sourced support of more than 5,000 desktops to MCI Systemhouse in Atlanta in a pact worth \$25 million. ... **Netpage Communications Corp.** and more than 40 Web content providers announced support for the Resource Description Framework, a proposed standard for organizing, describing and searching for information on the Internet, intranets and desktops. ... **IBM** will ship the next version of its Cryptolite document-sharing software, which lets users wrap documents and multimedia files in a software "envelope" that serves as a viewer for the document on the "net."

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# Netscape throws its hat into services ring

By Carol Slive  
MOUNTAIN VIEW, CALIF.

NETSCAPE COMMUNICATIONS CORP. last week formally launched expanded forays into consulting, electronic-commerce and online services.

But analysts said they hope Netscape stays focused on its enterprise strategy.

"So far, they are on track to becoming an established large-scale server vendor and one of the significant software vendors in the new distributed software environment," said Ezra Gottheil, an analyst

at Hurwitz Group, Inc., in Newton, Mass. "They still have a major shot."

At a two-day briefing here, Netscape officials said the professional services division may grow from 135 employees to 600 by next year to help customers implement Netscape products.

Netscape's joint venture with Rockville, Md.-based GE Information Services — called Actra Business Systems — will ship added elements of its suite of software for electronic data interchange over the Internet. Bell Canada in Toronto last week announced it will offer the Actra product line to Canadian corporations.

A new online venture, called Netcenter, is aimed at helping Netscape and its partners exploit Netscape's well-trafficked World Wide Web site by serving up news, discussion groups and software to busy professionals.

El Lilly and Co. has urged Netscape to enhance its professional services, said John Swartzendruber, a senior information consultant at the pharmaceutical company in Indianapolis.

"This is a welcome bit of news," Swartzendruber said. He said Lilly usually didn't turn to Netscape for implementation help because "they've been thin in that area."

But Swartzendruber said he doesn't foresee recommending Netcenter to his end users because of concerns about the service's SmartUpdate software updating capability.

"We're trying to maintain a consistent [software] environment," he said. "Encouraging people to get the latest and greatest software isn't what we want."

Many analysts, too, said they are wary of Netscape's Netcenter venture. They said they fear that it may distract the company from its main mission and draw Netscape into competition with some of its partners.

## ENTERPRISE FOCUS

Attendees at the strategy briefing seemed pleased to hear about Netscape executives' continued focus on the enterprise strategy the company set in motion more than a year ago.

"There's a core set of technologies that need to be explained again and again until they reach major market share," said Tom Willmott, an analyst at Aberdeen Group, Inc. in Boston.

The company that came to fame via its Navigator Web browser has been pushing this year to gain a major presence in large corporations through its Communicator browser/groupware client and accompanying SuiteSpot server software.

Netscape also has been promoting a cross-platform application development environment centered on Java and the Common Object Request Broker Architecture for applications that will run across the Internet, intranets and extranets. □



Eli Lilly, CEO of Eli Lilly & Co.

"We're trying to maintain a consistent [software] environment"

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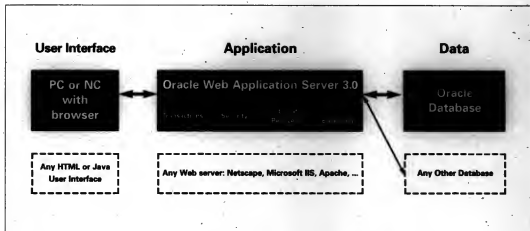
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# Hill takes first stab at U.S. crypto controls

By Sharon Machlis  
and Matt Hamblen

FOR THE FIRST TIME EVER, a congressional committee has voted in favor of putting restrictions on the use of encryption software within the U.S.

"It was high drama on the Hill today over encryption and very discouraging action," Jon England, vice president of the Information Technology Association of America in Arlington, Va., said last Thursday.

The vote by the House Permanent Select Committee on Intelligence marks a major setback for software industry and privacy advocates in their continuing battle with the White House over cryptography controls.

But that vote still has a long way to go before becoming public policy.

The measure, endorsed by the Intelligence Committee, requires that encryption software distributed in the U.S. after Jan. 31, 2000, provide "immediate access to plain-text data or decryption information from the encryption provider" upon presentation of a court order.

That has generally meant provision for third-party key escrow so an outsider can turn over a decrypting key to law enforcement officials.



Vice President Al Gore: The White House position on encryption hasn't changed

"We think it's horrible, and it's the worst kind of Big Brother solution," Englund said. The measure would allow continued use of non-compliant software obtained before the January 2000 cutoff date.

Current Clinton administration policies require licensing for exporting strong encryption, but White House officials have repeatedly said they don't support domestic controls. Two weeks ago, though, FBI Director Louis J. Freeh publicly came out

in favor of such restrictions — even as Clinton administration spokesmen insisted that wasn't formal White House policy.

"People expected at some point the administration would take the gloves off, and this week they did," said Alan Davidson, staff counsel for the Center for Technology and Democracy in Washington, a civil liberties group that opposes government regulation on encryption. "The debate has taken a new turn."

The hearing and vote came in closed session, with no industry or civil liberties groups able to testify. Davidson complained. "To conduct the whole process behind closed doors is not the way to inspire public trust in a secure infrastructure," he said. Other House committees that have considered the measure have voted in public.

The proposal passed in committee also requires one-time reviews for products sold overseas. Civil libertarians have long charged that the fight over export controls would come down to domestic restrictions.

Opponents of encryption restrictions have pinned their legislative hopes on the Security and Freedom through Encryption (SAFE) bill, sponsored by Robert W. Goodlatte (R-Va.) and backed by a majority of House members.

On Tuesday, the House National Security Committee added an amendment to SAFE that killed the bill's easing of export rules. Goodlatte's office then charged the committee with overstepping its authority by radically changing the measure, since the International Relations

Committee has jurisdiction over export issues.

The House Rules Committee has final say over what version of the bill is presented to the full House. Industry officials are hopeful SAFE will survive intact when it comes for a vote before the full House. Meanwhile, a bill that endorses current export policies is making its way through the U.S. Senate.

Vice President Al Gore defended the administration's policy of seeking controls on encryption export earlier this week at a Software Publishers Association (SPA) meeting in Washington (see related story below).

"The administration's position has not changed on encryption, but this is an area where we need to find ways to work together to balance the legitimate needs of law enforcement with the needs of the marketplace," he told the SPA Q.

## Lotus issues upgrades to ease Web app development

By Barb Cole-Candlish

LOTUS DEVELOPMENT Corp.'s Notes will shed another layer of its proprietary skin this week when the company ships client and server upgrades that are better integrated with the World Wide Web.

The Notes 4.6 client and the Domino 4.6 server have several new Internet hooks that are expected to make it easier to run the messaging and Web server software over IP networks.

For instance, the Notes 4.6 client now supports the Post Office Protocol 3 (POP3) Internet mail standard, allowing users to send and receive electronic mail from any POP3 account.

But the biggest beneficiaries of the upgrades may be application developers who have painfully straddled the Notes and Web worlds when building applications for Domino.

"This release will make the [development] work I am doing in Notes twice as easy," said Bruce Padmore, a Notes developer at Millennium Production, a Web site consultancy in Cambridge, Mass.

That's because the full Notes client — renamed Notes Designer for Domino — has im-

PRODUCT	ENHANCEMENTS
	<ul style="list-style-type: none"> <li>• Supports POP3/SMTP Internet mail protocols</li> <li>• Tighter integration with Lotus SmartSuite and Microsoft Office applications</li> </ul>
	<ul style="list-style-type: none"> <li>• Supports IMAP and Network News Transfer Protocol</li> <li>• Web browser-based administrative tool</li> </ul>
	<ul style="list-style-type: none"> <li>• Supports Java applets</li> <li>• Bundled templates and applications, including Lotus BeanMachine, a tool for writing Java applets</li> </ul>

proved support for Java and includes Lotus BeanMachine, a Java applet builder, he said.

Large sites building applications for Domino have faced a dilemma because applications built for Web browsers don't translate well to the Notes client environment. Similarly, applications built for Notes clients lose functions when ported to the more stripped-down browser desktop.

To help remedy this, Lotus has added a "Hide" option, so developers can build features in to an application that will be available to Notes users, but not Web browsers.

### EMPHASIS ON GRAPHICS

David Marshall, an analyst at Futuza Seybold Group in Boston, said the enhancements in Notes 4.6 will make it easier to develop applications for the dual Notes/browser environment, but the company still has work to do in this area.

"Ultimately, they need a much more graphical design tool," Marshall said.

Several beta testers said new Notes users may benefit most from the enhancements in the client and server. In addition to the development features, the Notes user interface has been redesigned with tighter integration between Notes and office applications, such as the company's own SmartSuite and Microsoft Corp.'s Office suite.

Aaron Wilz, a technical analyst at McDonald's Corp. in Oak Brook, Ill., said the revamped interface will be easier to navigate than Notes' traditional tab format. "[Version 4.6] is more intuitive," he said.

On the server side, Domino 4.6 includes an updated HyperText Transport Protocol server that is expected to serve up Web pages faster.

It also supports the Internet Message Access Protocol, which gives users more flexibility in the way they retrieve mail off the Internet. □

Insurance firm cuts claims processing time by using Domino. Page 41

## Power players

Vice president Al Gore and a top White House aide last Thursday defended a Clinton administration policy that restricts exports of cryptography technology before the Software Publishers Association, which has been pushing to ease regulations.

In Manhattan, the administration's point man on encryption policy, said there might be "practical problems" with current export rules and said he widely known views of opposing the Clinton policy are "misleading" and that should remain internal. "... I'm here to represent the administration."

He said the White House is negotiating with Congress on the issue and he was hopeful there would be a resolution "within six months."

Gore said there should be room for compromise on encryption between the needs of the marketplace and the need for security, but he didn't elaborate.

But the Electronic Frontier Foundation in San Francisco accused the White House of playing "good cop/bad cop" on the issue, flouting its "liberalized domestic-control proposal" on grounds that existing rules will look better in comparison. Stanton Macdonald, program director at the foundation, said he hopes several pending court cases will protect the right to use and sell encryption products. — Matt Hamblen and Sharon Machlis

For these and other related links, point your browser at [www.computerworld.com/links/970918gpc.htm](http://www.computerworld.com/links/970918gpc.htm)

Background and History of the Security and Freedom through Encryption Bill (S.F. 695)

[www.fbi.org/jprg/High\\_Tech/SAFE/background.html](http://www.fbi.org/jprg/High_Tech/SAFE/background.html)

The Impact of Encryption on Public Safety — Statement by FBI Director Louis J. Freeh

[www.fbi.org/jprg/High\\_Tech/SAFE/impact.html](http://www.fbi.org/jprg/High_Tech/SAFE/impact.html)

Talk of H.R. 695

<http://www.usdoj.gov/asp/hs/qa/970918gpc.htm>

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# Few sites backed by planning

► Users shift from experiments to building E-commerce strategy

By Mitch Wagner  
LOS ANGELES

AT THIS STAGE of the Internet game, very few companies have the kind of well-thought-out business plans that will make their online ventures worthwhile.

That was the consensus among users, vendors and analysts last week at Internet Commerce Expo here.

For example, HomeBase, Inc., a \$4.3 billion home-supply chain in Irvine, Calif., currently has a brochureware site on the World Wide Web. But Mike Relich, assistant vice president of systems development at HomeBase, realizes that isn't enough.

He was at the conference looking for information on how to create a sales-oriented Internet site that would appeal to building contractors who are uncomfortable visiting HomeBase's consumer-oriented stores.

"If we don't develop a coherent strategy quickly, we'll be in

trouble," Relich said. "Management doesn't understand technology. They see the Internet in [The Wall Street Journal], they know they have to deal with it, but they don't know what to do with it."

The quick-start approach of simply posting company brochures on the Web is good for establishing an Internet presence and learning the technology. But achieving real results online requires a coherent plan, said Ray Shortridge, director of information technology at Girls, Inc., a nationwide association in Indianapolis that provides activities for girls and promotes their self-esteem.

Girls, Inc. plans to expand its site from brochureware to educational materials, interactive quizzes and games for girls. By ensuring girls' participation at the site and tying online materials to its after-school and weekend programs, Girls, Inc. hopes to use online activities to gauge the popularity and effectiveness

of its real-world efforts.

Electronics components supplier AMP, Inc. in Harrisburg, Pa., uses the Internet to reach its smallest customers. AMP looks to the Internet to improve business with about 80,000 small companies that do low-volume purchasing, said James Kessler, director of AMP's Internet Solutions at AMP.

"Meeting the needs of those lower-tier companies is key to the Internet providing growth for our company," Kessler said.

AMP offers product information on the Internet to its small customers as a companion to the virtual private network it uses for its largest customers. The company also looks to the Internet for savings on its \$800,000-per-year fax-back information program for its customers.

AMP now measures success in terms of usage — the site receives about 100,000 visits per day from registered users in 118 countries. About 250 to 350 new users sign up each day; 50 to 70 sign up each Saturday and 80 to



100 on Sundays, Kessler said.

Once goals have been set, companies need a way to measure those goals. If the goal of the site is to produce revenue, then measuring its effectiveness is simply a matter of counting the money, said Alan Citron, president and chief operating officer at the Ticketmaster Multimedia unit of Ticketmaster Group, Inc. in West Hollywood, Calif. The company earns \$3

million monthly in ticket sales from its Web site.

But having a well-thought-out business plan presents its own hazard: excessive rigidity, said analyst Ted Julian at International Data Corp. "Controlled chaos — it's perhaps the best answer," he said. □

Partnerships help companies launch E-commerce projects. Page 49

## Dell facilitates recruiting via video service

By Julia King

LIKE OTHER COMPANIES at this week's Recruit '97 show in New York, Dell Computer Corp. will be on the prowl for qualified technology professionals.

But the Austin, Texas-based computer maker hopes to gain a leg up by interviewing candidates on the spot via a new PC- and video-based interview network service called SearchLinc.

Rather than host a recruiting booth at the show, Dell will interview candidates from Austin via a PC set up in the booth of National Career Search, Inc., the Boulder, Colo., recruiting firm that is marketing the service.

Video interviews could cut Dell's average hiring time by as much as two weeks and save thousands of dollars in travel costs, said Amy Baker, a Dell staffing director.

"For some positions, we might bring people to Austin two and three times [for interviews]. The video process could

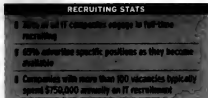
conceivably cut out at least one of those," Baker said.

The SearchLinc network is a PC-operated system that lets employers interview candidates by video via links with professional studios in 21 cities in the U.S. and Canada. The sessions are transmitted over Integrated Services Digital Network (ISDN) lines, with the SearchLinc software generating "near-television" picture quality.

sec., so there's not a lot of jerky movements, and the lips and voice are in sync," he said.

The cost of the service is \$500 per month, which includes the SearchLinc software, a video-equipped Pentium-based PC and a 21-in. monitor and the necessary ISDN lines. Interviews, which are set up by National Career Search, cost between \$215 and \$350, Remickoff said.

Face-to-face interviews can



Source: International Technology Association of America, Washington

National Career Search's participants in SearchLinc are The Communications, a telecommunications carrier in Kansas City, Kan., and Dallas-based 3011, Inc., which developed the PC-based video system software.

Video quality is the network's key difference, said National Career President Gary Remickoff. "We're delivering 26 frame/

cost three times as much, especially in cases in which a candidate is flown in from the opposite coast, said Pam Craven, an information technology staffing director at State Street Bank in Quincy, Mass. □

Companies use multimedia labs and desktops to train workers in-house. Page 41

## HP will build to order

► Firm revamps PC unit, offers Pentium II line

By April Jacobs

PLAYING A GAME of follow the leader, Hewlett-Packard Co. last week revamped its PC business to offer made-to-order PCs and introduced a line of Pentium II-based models.

HP's strategy closely follows a strategy announced in June by the No. 1 PC maker, Houston-based Compaq Computer Corp.

Both companies will build and configure computers to order. They also will broaden their corporate desktop options to include relatively inexpensive Pentium-based PCs.

With the new manufacturing and sales approach, Palo Alto, Calif.-based HP can cut inventory costs and deliver PCs that are more customized.

Analysts said the moves were designed to help HP and Compaq combat rival Dell Computer Corp., whose PC business has grown more than 50% in the past year.

Unlike HP and Compaq, Round Rock, Texas-based Dell sells direct to its customers and builds all its systems to order.

That reduces its manufacturing costs.

Many business users are attracted to the lower costs associated with buying direct from a manufacturer. But some users said they like the model being adopted by HP, which cuts costs but lets users shop through a reseller that stocks a variety of brands and price ranges.

Bob Perkins, vice president of Ticketmaster Online, Inc. in West Hollywood, Calif., said he likes PCs to arrive ready to be plugged in.

"Our reseller can ship the PC totally configured the way I want it, with software added and peripherals ready to go," he said. "Our [reseller] has done a very good job of presenting us with a smorgasbord of options, and we can choose what we want."

Dell also ships and configures PCs for its customers, but users said the number of third-party peripherals is limited with direct resellers. Also, some users said resellers let them shop for different PC brands without having to place multiple telephone calls. □





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# Apple clone makers shut out

► Power Computing, Motorola lose licensing battle; Umax stands alone

By Kim Givens

APPLE COMPUTER, INC. continued to stamp out its perceived rivals last week, leaving Umax Computer Corp. as the lone Macintosh clone provider with a licensing deal.

After long negotiations with Apple over fees and the use of Apple's Common Hardware Reference Platform (CHRP), Motorola, Inc. said it will stop making Macintosh clones. Motorola is a key supplier of the

PowerPC microprocessor for the Macintosh.

Clone makers had planned to use CHRP to sell faster and better-performing machines than Apple's.

"This was a tough decision for all of us, but given Apple's position on licensing and the future of the licensing program, we really had no choice," said Joe Grogg, vice president and general manager of Motorola's computer products division in Tempe, Ariz.

After two months of talks, Grogg said the company would cancel plans to ship its StarMax 6000, a PowerPC-based computer unveiled at Macworld Expo/Boston last month. Company officials said it will take a charge of \$95 million for losing the Macintosh look-alike business.

## SUPPORT PLANS

Motorola said it will sell existing models until demand dries up; it will continue to supply its sub-licensees with hardware designs and older versions of the Mac OS; and it will provide phone support to its customers for 12 months.

Motorola's announcement came the week after Power Computing Corp., the largest clone maker, said to Apple its "key assets" — including a list of 20,000 customers — in a \$200 million stock exchange (CW, Sept. 9). Power Computing, in Round Rock, Texas, will

FATE OF THE CLONES	
Vendor	Status
Power Computing	Assets gobbled up by Apple in \$100 million stock deal. Will be out of clone business by year's end.
UMAX	Gets reprieve. Granted right to produce machines using Mac OS 8 on its systems until next July.
Motorola	Gets nothing after negotiations with Apple collapsed. Waits away with a warehouse full of StarMax 6000 systems that can't be sold.

stop making Macintosh clones as of Dec. 31.

IBM also is expected to scuttle its Mac OS licensing program, analysts said.

While the other clone makers failed, Fremont, Calif.-based Umax won the right to put Mac OS 8 on all current Umax systems — excluding CHRP — until next July. Umax targets low-end machines and is therefore the least threatening to Apple.

"Motorola got screwed by Apple," said James Staten, an analyst at Datquest in San Jose, Calif.

In justifying Apple's move, Steve Jobs, a member of the Apple board, argued that clones were cannibalizing the com-

pany's profits while failing to expand its user base. In the second quarter, clones held about 20% of the U.S. Macintosh computer market.

Shutting down the clone makers may not help Apple. According to Datquest research, between 40% and 60% of those 100,000 clone users will move over to "Wintel" machines when they upgrade.

And understandably so, said Bill Murray, information systems director at Tribune Broadcasting Co. in Chicago.

He said Apple is "cleaning up" to make the company more attractive as a sale bid, "but is leaving users on shaky ground in the process."

## Newton doesn't fall far from the tree

Apple last week announced that it will bring the company's Newton subsidiary back under the corporate wing.

"They were going to sell [Newton], but no one wanted to buy it," said James Staten, an analyst at Datquest in San Jose, Calif.

Newton was spun off in July 1996 as an independent company with its own budget, business plan and logo. The spin-off focused on selling the MessagePad 2000. Apple now has decided to take Newton back and make the EMate 300, a thin client for education that falls between the size of a handheld and a laptop. The EMate 300 uses the Newton operating system. — Kim Givens

# NetPC effort stalls

CONTINUED FROM PAGE 1

Analysts point to the NetPC, a specification jointly sponsored by Intel Corp., Microsoft Corp. and several hardware vendors, as the most bungled and confusing rollout of the year.

For example, despite the line-up of vendors that announced support for the Wintel desktop initiative in June, most of their offerings haven't hit the streets yet.

And IBM last week not only withdrew its support for the NetPC, but also announced a competing, small-footprint desktop in its place. IBM's eNetPC PC series will debut next month within the corporate PC 300GL series. It will feature on-board remote manageability and a design that has additional bus slots. It won't have the NetPC moniker.

"The NetPC was incompetently marketed because the vendors got caught up in trying to describe the differences between it and a PC. What came out of it was that while you pay the money, you get less," said Rob Enderle, an analyst at Giga Information Group in Cambridge, Mass.

"Users responded by saying,

"Why do we care?" It was phenomenal only in terms of how badly it was bungled," he said.

Users have criticized the NetPC for not providing anything new. The NetPC combines a small desktop with very few

Mass-based International Data Corp. (IDC). The NetPC isn't really much more than a highly manageable PC and certainly not a new platform, Kay said.

But Microsoft officials said the NetPC just needs more time on the market to gain wider acceptance as a hardware platform.

"Overall, it's manageable hardware that people want,"

but it's a dream right now," he said.

"Customers just aren't demanding the NetPC," Kay said. IDC predicts that NetPCs will garner only 1% to 2% of worldwide desktop sales in 2002, which is expected to be about 100 million units total.

But not everyone is dumping the NetPC concept, particularly because it offers some remote troubleshooting capabilities.

Those include software distribution and systems configuration through Microsoft's Zero Administration for Windows, which will be embedded in Windows 98 and is out in kit form for Windows 95.

Al Spangenberg, vice president of technology at The Prudential Insurance Company of America in Newark, N.J., touted the automatic configuration and remote diagnostics features.

He said the insurer, which has more than 50,000 end users, is looking at both the NetPC and network computers as a way to reduce the total cost of ownership of desktops.

"The NetPC is a rebranding of a number of features that make the PC platform more manageable. It allows us to preserve our investment in our current software applications, which will all run as they do now," he said. □

# Micromouse demos service-level tool

By Patrick Dryden

MICROMOUSE, INC. this week plans to demonstrate in New York a service reporting option and a monitor of frame-relay network connection for its NetCool software.

NetCool helps central IS operators make sense of alarms that pop up throughout complex networks. Local users, including Goldman, Sachs & Co., feed event information from diverse management tools to NetCool in order to kill the alerts and provide a single source for reports, said Peter Koski, vice president of application and systems management.

That correlation process hides much of the underlying management complexity from operators, Koski said, so information systems staff can track the service it provides more efficiently.

The upcoming NetCool Reporter attempts to interpret database details through charts, bills and performance analysis. The goal is to help IS meet its service-level agreements for the availability of networks, systems and proprietary environments, such as telephone switches. □

The NetPC reference platform includes the following specifications designed to improve PC manageability:

- Remote management, including Microsoft's Zero Administration for Windows
- Shielded case to prevent unauthorized users from accessing the machine
- No floppy drive, so users can't load software locally

peripherals, no floppy drive and a lock-down case.

Many users say they are still confused about the difference between a network computer — a thin-client device that runs applications from a server — and a NetPC.

## FASHION STATEMENT

"This is really just a fashion statement. It's like the difference between driving a big car and a little car," said Roger Kay, an analyst at Framingham,

said Stacey Breyfogle, Microsoft's product manager for the Windows platform.

But Jim Smiley, a systems consultant at Sun Oil Co. in Philadelphia, said the NetPC appears to be too limited as a PC to serve as a replacement device. Network computers are a natural in the terminal replacement market, he said.

For now, both platforms are too immature for his company to consider. Smiley said. "It may be of interest in the future,

# Business users await Java devices

By Sharon Gaudin

CONSUMER DEVICES aren't just for the consumer market anymore.

While everything from Java-embedded pagers to toasters has been getting a lot of attention in the consumer market, many in the corporate world are starting to roll up their sleeves for the latest Java-based information injection.

"I think people in the corporate world are getting really excited because it's all about getting more and more information," said Frank Mancini, network technical manager at Colonial Savings F.A. in Fort Worth, Texas. "It does not matter if you're talking about a Java-based Web

page or a lock that has embedded Java software.

"Say I want to know when a door in my office was locked or unlocked and who unlocked it. If it's not a smart lock, I can't know that. Embedded Java can give me that information," Mancini said.

**Red Storm's Kevin Perry: "Running Java on a wider range of platforms is only a good thing from our perspective"**

Corporate interest in what generally have been considered consumer devices is growing as Sun Microsystems, Inc. puts its shoulder solidly behind the Java push. Java-enhanced screen telephones, cellular phones and pagers all are expected to hit the market next year.

And last week Sun announced it is forming an Embedded Systems Software Group to focus solely on that market. Also, the Mountain View, Calif., company announced that it bought Chorus Systems S.A., a Paris-based developer of operating system software for telecommunications devices.

Jim Hebert, general manager of Sun's newly formed group, said the acquisition should speed up research and development in the embedded market by at least one year.

## GOOD NEWS

And that's all good news for many corporate information systems managers and developers who already are envisioning ways to put this new technology to work.

"Running Java on a wider and wider range of platforms is only a good thing from our perspective," said Kevin Perry, a producer at North Carolina-based Red Storm Entertainment, author Tom Clancy's Internet gaming company. "Right now, our games can only target people with home computers. When these devices take hold, there'll be a whole new range of ways to get our games into people's homes."

Paul Zoefas, an analyst who covers the embedded software market for International Data Corp. in Framingham, Mass., said he sees businesses putting networked devices to use in the not-so-distant future.

"Think of a health care professional

who has an intelligent device that can download a list of tests that need to be done on the next patient, or a pager that gives him a patient's medical history when it alerts him to an emergency," Zoefas said. "You see it now with UPS and Federal Express and their

handheld notepads."

Dennis Kremer, a programmer and analyst at Pittsburgh-based RPS, Inc., said spreading Java out from the desktop assures him that a standardized Java will flourish.

"The more markets Sun gets Java into, the better," Kremer said. "The more devices that use Java, the better chance the language has of surviving attacks from Microsoft." □



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# DEC boosts StorageWorks performance

By Tim Ouellette

DIGITAL EQUIPMENT CORP. users will have to wait a little longer to get some fibre in their storage diet.

Digital this week will unveil a line of StorageWorks RAID disk arrays based on

UltraSCSI technology — even though much of the industry has become enamored with potentially faster Fibre Channel offerings.

UltraSCSI is an enhanced version of SCSI, the standard but aging method of moving data between computer devices.

Fibre Channel has the potential to leap over UltraSCSI's 40-M byte/sec. transfer limit.

But users and analysts said the performance improvements in Digital's new disk arrays, the relative immaturity of Fibre Channel offerings and the support

of Digital's renowned service business will keep the Maynard, Mass., firm in the upper tiers of a robust storage market.

And Digital later this year will deliver a Fibre Channel controller that can be plugged in to existing StorageWorks arrays, company officials said.

"Now I won't have to retrain our service guys," said Jean-Luc Chatelein, vice president of engineering at Cemas-Imation, an imaging company in Fremont, Calif. "We are looking forward to Fibre Channel, and all I will have to do to get it is slip in the new board."

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COMPUTERWORLD



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## STORAGE AT WORK

Digital's StorageWorks disk arrays include:

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### RA 3000

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Capacity: 1090 bytes  
Base price: \$2,420

The products in the new StorageWorks line promise to double performance over their SCSI predecessors, without a price increase. The line includes new storage management software. It supports multiple Unix and Windows NT servers and provides a range of storage levels from high-end Unix storage to PCs (see chart).

"We went with Digital for reliability and serviceability," Chatelein said. "We need that. We manipulate such large amounts of data that we can bring most systems we use to their knees."

Cemas-Imation uses the new departmental RA7000 array in its imaging archives, even though the archive is managed by a Sun Microsystems, Inc. server. Sun offers Fibre Channel storage, but Digital's large service organization played a major part in Cemas-Imation's decision to stick with UltraSCSI technology, Chatelein said.

This is an important area in which Digital hopes StorageWorks' speed, flexibility and low price will garner new users who run other vendors' servers.

A recent survey of 153 StorageWorks sites conducted by Boston Research Group found that most Digital customers — including Cemas-Imation — want to hook other servers to their disk arrays.

Although Digital now reaps nearly \$a billion per year in storage-related sales, the company has to expand its business to non-DEC platforms even further, said Anders Lofgren, an analyst at Giga Information Group in Cambridge, Mass. □

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# Hacker pens guide to Internet security

By Sharon Machlis

WANT TO LEARN how to breach a server? Find lists that generate virus code? Hide your identity in cyberspace?

Would-be hackers typically turn to underground journals or cracker World

Wide Web sites for such tricks and tips. But now a mainstream publisher has a book filled with such advice.

Aimed at systems administrators, Maximum Security: A Hacker's Guide to Protecting Your Internet Site and Network is currently among Macmillan Computer

Publishing's top 20 sellers on its computer list. And it has sparked another round of debate—in places such as Usenet newsgroups and the Amazon.com book review Web site—about how much security information should be disseminated to the general public.

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Cable Television Industry Association, Foundation for the Digital Education Corporation, and MCI Foundation.

The book's author, who prefers to go by "anonymous" because of a three-year stint in prison for financial fraud, readily admits that his work can be used "as a tool to facilitate illegal activities."

From bug-reporting lists to network testing tools such as SATAN (Security Administrator's Tool for Analyzing Networks), the security community continues to wrestle with the dilemma of how to help administrators harden their systems without giving malicious attackers a chance to improve their skills.

"It's a double-edged sword," said James Havens, MIS manager at The Mailhouse, Inc. in Avon, Mass. "The information is important for IS managers. If I had to make a decision, I'd be in favor of the information being published—but reluctantly."

Mark Taber, executive editor at Sams.net, acknowledged that parent company Macmillan had some early misgivings about the project.

Officials resolved their unease by focusing on the security aspects of the book. "The marketing people wanted to play up 'how to hack,'" he said. But that approach was nixed, along with ideas such as using prison bars as a cover illustration.

But doesn't a book like this help educate malicious hackers?

"The information is out there," Taber responded. "The hackers know where that information is."

With details of security holes regularly distributed on newsgroups and Web sites, administrators who fail to keep up with the near-daily bug reports are in increasing danger of falling victim to attacks.

Experts say many network breaches come from known bugs, which some administrators didn't fix despite advisories about vendor patches or upgrades.

"If vulnerabilities are not known to the people who need to protect themselves... the situation is risky," said Peter Neumann, principal scientist at SRI International, Inc. in Menlo Park, Calif., and moderator of the Internet Risks Forum newsgroup. "But the proper solution would be to put much greater emphasis on the security, integrity and reliability of our computer/communications infrastructure, which is much weaker than it should be." □



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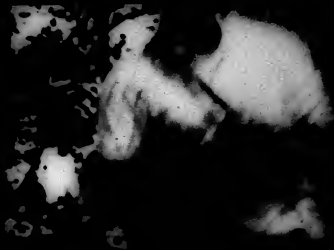
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# Object-oriented program speeds social services

► California nutrition program offers service up to three times faster

By Sharon Gaudin

A WOMAN WALKS INTO A WIC clinic with a baby in her arms and a toddler at her heels. The long lines that used to prompt her to turn around and head home are gone. Instead, she easily moves to an available counselor, who calls up her history and current needs on a computer screen.

Within 10 minutes, she has the coupons she needs for milk, cheese and peanut butter, and she and her children are out the door.

She could be any of the 1.4 million women and children who are being served by the California Department of Health's Women, Infants and Children (WIC) program. The program and the people it serves were boosted by an object-oriented application that speeds clients through the process two to three times faster than before.

The application, built with IBM's VisualAge tool, saves the



WIC Program Director Diane Phillips: "This program has changed everything. It used to be a nightmare."

state about \$2 million per month in time saved, copying and paperwork eliminated and workers reassigned.

"This program has changed everything," said Diane Phillips, WIC program director in Napa, Calif. "It's completely changed

the clinic. It used to be a nightmare. Now we can actually book or appointment times, and that's drastically decreased our no-show rate."

"We've been able to shift our focus from all that labor to what we really need to do — help get

nutrition to children and their moms," Phillips said.

The national WIC program, funded by the U.S. Department of Agriculture, ensures that impoverished women get the nutrition they and their unborn or young children need. California alone has 500 clinics where women go for classes, check-ins and food coupons.

The information systems department at the California Department of Health built an application — the Integrated State Information System — to support the agency's approximately 3,500 staffers. Byron Roberts, project manager at the Sacramento-based health department, said he used IBM's Visual Generator, a fourth-generation language application development tool for building workstation-based programs.

Before the application was running, workers at any given clinic had to share one appointment book. That meant workers and their clients had to sit at one table, grappling for the book and filing and shuffling reams of papers. That setup killed any privacy the clients might have to talk about their financial, nutri-

tional and possible drug-dependency situations.

Now workers have their own desks and computers. The application, which plugs in to an IBM mainframe that handles more than 1 million transactions per day, calls up a family outline, history of appointments, list of what appointments need to be made and the family's food preferences.

## SHOWING THE MONEY

Once the worker fills in the client's new information, the application automatically prints out WIC checks, specifying what the client can buy and how much money can be spent.

"It would take two to three times the amount of time it now takes us to care for someone," Phillips said. "And it's not just that we're spending less time. We're spending better quality time."

The application is slowly being converted to a client/server application. "We're upgrading to PCs," Roberts said. "That will make the application even cheaper for us to run. It might probably be five years before we get it all switched over." □

## INTERNET SERVICE

# WorldSite serves up Hollywood on Web

By Matt Hamblen

THE NIGHT he premiered his first World Wide Web site, for the movie *Mission: Impossible*, John Paulkulis recalls a near disaster — and lots of screaming.

Hollywood glitters: were gathered at a party to watch and interact at Macintosh kiosks. But the server, maintained by a remote service contractor, was down.

"Everybody was there, and we were crashing," Paulkulis said.

Paulkulis, then director of interactive marketing at Paramount Motion Pictures in Hollywood, had the foresight to bring a backup videotape of the site, which he ran over the kiosks, avoid-

ing a total disaster. "Then I made a bunch of phone calls and started screaming to the contractor running the server for the site," he said.

The site came online later during the party, but the service provider was fired. "I told them, 'Don't let me down,' but they did let me down," Paulkulis said.

Enter Adam Joffe, president of WorldSite Networks, Inc.

in Beverly Hills, Calif.

Paulkulis hired WorldSite because it was gaining a reputation for hosting and maintaining movie sites, a specialty because of the enormous number of hits such sites get and the games and other complex interactive applications they employ.

Within a year, Paulkulis produced nearly 20 movie sites for Paramount with WorldSite's help. "They've been very responsive. After all, there is a service industry, and WorldSite is truly a by-7. If I call, Adam will go to WorldSite's headquarters to fix things."

Paulkulis has left Paramount to start Visual Artist Group in Santa Monica, Calif., and hopes to use WorldSite's services to host sites that promote television game and crime shows.

Paulkulis said WorldSite is now recognized as the biggest movie site hosted by Hollywood producers. The company has created and served "hundreds of sites" since its inception in 1993 and now receives 20 million hits per day on

its servers, Joffe said.

Clients include Pioneer Electronics, Inc., Fox Interactive and other businesses owned by media mogul Rupert Murdoch and Yahoo, Inc. for the Los Angeles region. One early site built for a Star Trek movie took 6 million hits per day.

Joffe said his privately held business has been profitable since last year, making it unusual in the world of Internet service providers and Web hosting. He wouldn't disclose revenue.

It helps that WorldSite has developed expertise with a niche audience, sticking only with business customers, nearly all of them in entertainment, Joffe said. "The studios are pretty demanding," he said. "We're known for having the ability to do big old sites with lots of traffic and complexity that have to be kept up and running," Joffe said.

Paulkulis said WorldSite also

has earned its reputation by offering prices for services that meet or beat competitors. For example, a monthly TI connection to WorldSite costs \$1,000, nearly half the industry average.

"We optimize our workload and have a lot of automation in



Clients include Fox Interactive and other promoters of movies and TV shows

place, and that helps keep our overhead down," Joffe said.

It also helps that the co-founder and technical director is Joffe's brother, Ethan. "I do the networking, and he's the server and software guy," Joffe said. □

WorldSite is recognized as the biggest host of movie sites, getting 20 million hits per day



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# Computer Industry

## EDS off balance after spin-off from GM

By Thomas Hoffman

WHEN General Motors Corp. spun off its Electronic Data Systems Corp. subsidiary last year, Wall Street analysts expected the unshackled services giant to spread its wings and take its earnings and revenue to new heights.

Instead, the Plano, Texas-based systems integrator has been grounded by a string of disappointing quarterly financial results.

However, the company used its own consulting know-how to launch a massive cost-cutting and re-engineering initiative earlier this year that analysts said already is starting to show results.

### EDS EARNINGS PER SHARE ESTIMATES



Source: First Call Corp., Boston

Several factors contributed to EDS's financial problems, which look even worse when compared with the double-digit growth reported by the rest of the information technology services companies.

GM and Xerox Corp. restructured large outsourcing contracts in ways that crimped EDS's profit margins, analysts said. EDS also failed to factor inflation into some of its bigger contracts in 1994 and 1995. When labor shortages drove salaries skyward, additional pressure was placed on EDS profits.

And the company's recent focus on winning smaller but more profitable contracts has yet to have an impact on the bottom line.

Despite all that, some Wall Street analysts, pointing to some recent EDS wins and its reorganizational moves, said a turnaround is already under way.

EDS's new business—which includes a \$3.2 billion outsourcing contract signed with Bell-



Alvin Kattin, EDS vice president in charge of sales, says, "They [EDS] were good, fair business partners. We parted as friends."

South Corp. last month—is generating 2.4% gross profit margins vs 16% for contracts it signed in 1994 and 1995, said Moshe Kattin, an analyst at UBS Securities in New York.

EDS's new business "is strong, healthy and profitable," Kattin said. And EDS has maintained a strong balance sheet.

In its reorganization, which began in January, EDS has identified 8,500 nonrevenue-producing positions that will be

eliminated, affecting 5,400 people. Of those, 2,400 are being redeployed from staff positions to revenue-producing positions, such as account sales and support positions, said Cecilia Norwood, vice president of EDS communications. The other 3,000 have left or will leave the company by year's end, she said.

### BIG SAVINGS

Through its cost-cutting efforts, EDS expects to slash \$50 million from its overhead this year and \$500 million to \$700 million going forward, Norwood said.

In the second phase of its Future-By-Design project, launched in July by 25 consultants from EDS unit A.T. Kearney, Inc., EDS began re-engineering its core business processes to better meet customer needs.

For example, EDS has "colapsed" some of its strategic business units to eliminate redundant expenses and improve decision-making for its custom-

ers, Norwood said.

Other areas for improvement include finding and installing better risk assessment and forecasting systems to help support EDS's financial strategies, she said.

AlliedSignal Aerospace in Torrance, Calif., has had mixed results with EDS. About three years ago, EDS was contracted by AlliedSignal to build a massive, worldwide procurement management system. "I thought they did a pretty good job of it," said Chief Information Officer Paul Hoedeman.

But a desktop support outsourcing contract that followed the first project ran into problems, mainly because certain automated desktop management tools weren't available at that time for things such as remote software support and distribution. "There also wasn't enough fit in the contract in terms of margins for EDS," Hoedeman said.

Senior editor Jaikumar Vijayan, contributed to this report.

## Sun stands alone . . . SGI joins NT crowd

By Jaikumar Vijayan

WINTER has made a convert of yet another Unix diehard.

Bowing to the growing influence of Windows NT in the workstation market, Silicon Graphics, Inc. (SGI) last week confirmed that it will start making Intel Corp.-based systems that run the Microsoft Corp. operating system in the second half of next year.

At the same time, company officials said SGI will continue manufacturing high-end Unix workstations based on MIPS Technologies, Inc.'s RISC chip.

SGI's move is yet another endorsement of Windows NT by a hitherto Unix-only vendor and

should further reassure users about NT's ability to handle increasingly powerful workstation applications, analysts said.

"To a certain degree, SGI's move legitimizes NT as a platform where high-performance graphics can be delivered," said Greg Weiss, an analyst at D.H. Brown Associates, Inc. in Port Chester, N.Y. "SGI has been a Unix stalwart and it wouldn't get on NT if this wasn't the case."

Despite its success in the Unix market, SGI's move to NT was considered inevitable for several reasons. Its low-end markets have been coming under fierce pressure from NT. In fact, market research firm Aberdeen Group, Inc. in Boston estimates

that the installed base of NT workstations will double from 1.1 million this year to 2.2 million in 2000, while that of Unix workstations will more than halve from 675,000 to 300,000.

Meanwhile, SGI has been coming under increasing pressure at the high end from Sun

Microsystems, Inc. and Hewlett-Packard Co., both of which recently began to attack SGI's market with powerful new Unix workstations.

"NT itself may not have started affecting their revenue just yet," Weiss said.

But "given the current market dynamics, you've got to have Intel and NT in your product mix if you want to grow," an SGI spokesman said.

During the past two years, several Unix workstation heavies, including HP, Digital Equipment Corp. and Intergraph Corp., have announced Windows NT products. In fact, SGI's acquiescence to the Winter dual makes Sun the only major workstation vendor not to have Windows NT products.

Recently, Sun has made efforts to integrate its products better with NT environments, but so far, Sun hasn't announced any plans to switch to Winter technology.

### SGI FINANCIALS

■ Revenue ■ Profit

Quarter ending Dec. 31, 1996

Revenue: \$13M Profit: \$625M

Quarter ending March 31, 1997

Revenue: \$11M Profit: \$909M

Quarter ending June 30, 1997

Revenue: \$102M Profit: \$128M

## Control worries of large OS less

Optima-based Corp. said last week that it expects to post a \$50 million third-quarter loss.

Control worries less an accounting matter than it is a real one, says though it reported a loss of \$50 million in revenue, the company also reported a profit of \$10 million.

It downplayed the loss, saying it still had \$50 million in cash and expected to report fourth-quarter results based on Christmas sales of its new operating system.

"I think the company has yet to prove that it has a sustainable business model in the office market," said Steve Hirsch, an analyst at Adams, Harkness & Co., Inc. in Boston. He said he wasn't recommending Corp. stock and doubted the company's ability to sustain its growth.

Control's stock price has been steadily rising since its announcement to switch to Windows NT, but analysts are still skeptical about its ability to sustain its growth.

—Candace Mack

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## OPINION

## Got customers? That's what really matters

on the Web, and that's what the whole WorldCom/AOL/CompuServe deal was about last week. In a series of savvy moves culminating in the purchase of CompuServe and its 3 million users, WorldCom has leapfrogged all the major telcos to become the biggest global power broker in the Internet access game.

After you get past the eye-creasing complexity of the \$1.5 billion deal and the tangle of alliances involved, it's clear how much clout 13 million subscribers brings. That combined list of AOL and CompuServe users — with tens of thousands of business e-mail addresses embedded in there, too — makes The Microsoft Network's 2.3 mil-

lion customers look kind of

puny by comparison. Remember how everyone thought it would be Bill Gates and The Microsoft Network "dominating" the Internet?

Who would have figured that a little-known long-

distance upstart from Mississippi would become the latest high-tech household word? Yet WorldCom's lure of one-stop shopping for voice, data and Internet services is undeniably going to be a shiny one to a lot of corporate shops.

The \$5.6 billion firm's ascendancy underscores the commercial frontier aspects of the Internet, with all the unexpected excitement and peril that implies. The AOL/CompuServe deal also casts the revealing light of reality on this "content is king" belief about the 'net. As much as I love content (and what publishing company doesn't?), I think it's the connection that ultimately rules.

No single site or group of services will ever be able to provide all the content to satisfy droves of business users.

What will satisfy them is fast, guaranteed, reliable connection to the sites and services they need.

Assuming that the Department of Justice doesn't put the kibosh on this deal for antitrust reasons (an unlikely scenario given the dynamic state of the Internet), WorldCom's bigger hurdle still looms ahead. It has customers all right — now it has to keep them.



Maryfran Johnson, Executive editor  
Internet: maryfran\_johnson@cw.com



### Mine that desktop data!

THERE ARE SOME VERY INTERESTING views in the article "Data mining in a vicious circle" (CW June 30). I tend to agree with your message that data mining won't be as influential as people originally thought, at least for enterprise-wide data mining.

But what about data mining at the desktop level? For example, end users could access their data warehouse with a query tool, pull a subset of data to their desktops, then run a data mining tool against it. Then the question becomes: How do you shield the user from the statistical "goop," or at least provide a reasonable growth path for users to become more statistically sophisticated?

Robert L. Carriere  
Systems engineer  
Andyne Computing Ltd.  
robertc@andyne.com

### Feds have info rights

I DISAGREE WITH your description of the U.S. government as acting like a 5-year-old child, in the Up Front column "Misplaced keys" (CW, July 14) by Editor Paul Gillin. The U.S. government has a legitimate right in wanting access to information it can legally justify the need for, whether or not that information is digitally encrypted.

If an individual or organization needs to provide the best possible protection — without having to use key-escrow encryption software — they can use processes such as the CyberToken processes (www.CyberToken.com). It augments encryption, allowing a level of protection not possible with encryption alone, and the data is sent over a highly secure proprietary

system. This type of environment stays within the 56-bit encryption restriction as far as the Internet purities are concerned. And because the system is proprietary, the U.S. government will not have open access to the encrypted data being transferred.

Michael Scholnick  
Clay Pigron Technologies, Inc.  
Baldwin, N.Y.  
www.CyberToken.com

### Tax story fails reader audit

GENERALLY, I FIND Computerworld's stories accurate, informative and occasionally provocative. But your recent piece on upcoming 15 contractor legislation ("Tax proposal could free up 15 contractors," CW, June 30) was unfortunately by no means of these. Nowhere is the name of the legislation mentioned, and we are not told who proposed it, which legislators support it or why.

In addition, the statement that "In 1986, Section 1706 of the tax code set out guidelines for determining whether workers are employees or contractors" is incorrect. Section 1706, a part of the Tax Reform Act, repealed the "Safe Harbor Provisions" which had previously protected contractors. The 10 guidelines originated separately and were devised by the IRS. Finally, the article doesn't supply us with any way of finding out more specifically about the legislation other than three Web sites. That's a rather Web-centric approach to dealing with readers who may want to talk to someone.

Wendy Vandeme  
Boston, N.J.

### Software reliability matters

I WOULD LIKE to commend Computerworld for recognizing the exponential costs of "nonquality" in the Aug. 18 Special Report focusing on software quality. It was full of great facts, resources and case studies, and offered additional market insight with its in-depth look at the boom in software quality career opportunities.

Corporations must ensure that entire software systems perform reliably, no matter what components are used: from the GUI or Web front end to servers and the main database.

Software reliability has become a high priority of CIOs and IS managers who are charged with minimizing software risk in the enterprise. Thanks again for recognizing that reliable software is essential and the impact it can have on public safety — and from a bottom-line standpoint, a corporation's revenue stream and public image.

Elizabeth Sherman  
President and CEO  
Sage Software, Inc.  
Newton, Mass.  
More letters, page 38

Computerworld welcomes comments from its readers. Letters shouldn't exceed 200 words and should be addressed to Maryfran Johnson, Executive editor, Computerworld, PO Box 9171, 500 Old Connecticut Path, Framingham, Mass. 01701. Fax number: (508) 875-8951. Internet: letters@cw.com. Please include an address and phone number for verification.

# How do computers = productivity?

Kevin Fogarty

**T**hink the PCs on your users' desks contribute to their productivity?  
A lot of economists don't.

Princeton economist Alan Blinder and others think the time users spend surfing the Internet, playing games and downloading software keeps them from doing more work in a workday.

They've got some strong evidence, too. Despite an explosion of Internet and other technologies within businesses over the past couple of years, Commerce Department figures show productivity increased only 0.6% during the second quarter of this year, after years of slow growth or none at all.

But Federal Reserve Board Chairman Alan Greenspan recently told Congress he's optimistic about corporate investments in computer technology. He thinks high tech may help U.S. corporations leap to unheard-of levels of productivity over the next few years.

**A booming economy isn't like a locomotive. It's more like a school of fish.**

Only, he can't say how, exactly. The truth is, computers don't directly make people more productive — at least not in any measurable way.

But they do make decision-makers within large companies more effective. Companies can also make them more confident, and that's one big reason the economy is booming.

Pundits compare a booming economy to a racing locomotive, but it's really more like a school of fish. Its progress depends on individual decisions in thousands of tiny brains. Give those fish a high-tech way to detect the approach of a predator from a distance, and individual

fish in the middle of the pack are much less likely to be spooked by nonlethal surprises. That means fewer will panic and shoot off at random — taking part of the group with them, disrupting the school and making it more vulnerable to attack.

The computer industry analogue to that example is the analyst at a manufacturer who's responsible for forecasting sales and production volume for the coming six months. A forecaster who panics at a blip in the economy may cancel a slew of orders from suppliers and set off a chain reaction, as suppliers cancel orders to their own suppliers and so on.

That sequence can cause another economic blip that causes two more forecasters to panic. Speak enough forecasters, and you get a recession.

Good databases and decision-support tools help forecasters figure out which blips are dangerous and which aren't, surprising. Spreadsheets let them explore the financial consequences of various decisions; Internet access helps them do research on the fly and communicate with contacts in other divisions or other companies. Those things help

them make better decisions and make them more confident and less susceptible to panic.

High-tech factories and computer-controlled, just-in-time supply chains slash the costs of manufacturing and maintaining inventory — letting manufacturers respond more easily to changes in the economy. They also minimize the impact of bad decisions, further easing the pressure on forecasters.

In many businesses, simply being able to track via computer the progress of an important package being delivered by Federal Express vastly increases the confidence of people who depend on that package for a vital bit of business.

Good information systems add confidence, confidence adds stability and stability helps the economy progress to a point at which both inflation and unemployment are low.

There's your answer, Mr. Greenspan: stability.

Now, excuse me. There's an odd warning message on my screen, and my hard drive sounds like it's... □

Fogarty is sections editor at Computerworld. He can be reached at kevin.fogarty@cw.com.

## Can your Internet service provider run your computer?

John Gantz

**I**wandered around the Internet Commerce Expo in Los Angeles and reaffirmed my faith that the Internet will take over the world and that commerce will take over the Internet.

But then what? Where is my optimism vulnerable?

It has to be in service and support. Sure, catastrophic failures of the 'net (McCall's "gigalopes") or trillion-dollar electronic heists could turn my misanthropic forecasts into kindling. But I'm more worried about a slow, insidious degradation of the Internet experience than I am about meltdowns. And I have trouble seeing how today's service and support levels from our Internet service providers can do anything but go downhill — at least for a while.

As Internet service provider margins fall in the price war for basic Internet access, providers are looking for value-added products to offer. The closest at hand are service- and support-related, up to and including managing company intranets, running commerce sites and even handling PC administration. But for an average Internet provider, those services represent a new business model.

Project management, labor-rate accounting, certification and training — those don't come easily to companies that began as resellers of T1 transmission and IP addressing.

But let's say the Internet providers can learn, or others with more experience, such as Digital, IBM, Vanstar and Entel, take over the chore. There's a bigger problem. It's the way demand for service and support will increase faster than the supply of skills to service it.

In the next five years, the number of Internet users will grow fivefold. The number of Internet commerce users tenfold. Companies will be running on intranets, and estimates will be the main vehicle for intercompany transactions. With more and more Internet customers, there will be even more of a demand

placed on the system. Where 95% uptime is acceptable today, 99.5% uptime will be unacceptable tomorrow. Where only 15% of all PCs are on the 'net today, more than 50% will be tomorrow — each one a service call waiting to happen.

According to the Help Desk Institute, problem resolution for a typical service call when one vendor is involved is six hours. When multiple vendors are involved, it's four days. Internet service providers will have to cut that turnaround time by qualifying as first- or second-line support organizations for dozens of vendors. That's a big investment load for a company threatened with extinction.

Some of this incremental demand for service will be soaked up by the existing service infrastructure — companies that

can support client/server environments ought to support browser/server environments. But the increase in mission-critical applications enabled by Web technology will strain the whole industry.

For service firms, the Internet represents a potential long-term bonanza. But for CIOs and IS managers, the gap between what they need and what the industry can deliver could become a crevasse. Eventually, differential pricing on differential services — where you pay more for guaranteed uptime — will provide funding for Internet service providers to beef up service and support organizations. But they can grow only as fast as new technicians and consultants can be found.

So my advice if you are considering outsourcing anything other than basic Internet access to your Internet service provider is that you do extra due diligence on its real ability to perform. Check behind the mirrors to see who's pulling the levers. Most providers will promise more than they can deliver as they build their value-added capabilities. □

Gantz is a senior vice president at International Data Corp. in Framingham, Mass. His Internet address is jgantz@idc.com.

**The gap between what CIOs need and what can be delivered could become a crevasse.**

## Users don't need Internet Explorer to run Java apps

**I**N YOUR ARTICLE "Users between threat to cross-platform Java" [CW, Aug. 4], you interviewed Dave Moffitt at SAS Institute, who said he would have to ship two versions of his applications if Microsoft did not deliver the Java Foundation Class (JFC). This is untrue and illustrates a common misconception about Java. A Java application does not run in a Web browser and will not be affected [if Microsoft doesn't include] JFCs in Internet Explorer.

Moffitt's users can use the Java Virtual Machine, which is freely available from Sun, to run applications on Windows or other platforms, unmodified.

The Java Virtual Machine is free and will include all the JFCs. Users will not have to write two versions of Java soft-

ware as a result of Microsoft's recent decision to not fully support Java. Instead, they will be forced to use Netscape (Navigator) or Appletviewer rather than Internet Explorer.

*Eric Burke  
Object Computing, Inc.  
St. Louis*

## Windows 95 on Mars?

**I** SAW YOUR "Computer technology rides high during Mars mission" articles ["High tech fuels NASA mission on Earth, Mars," CW, July 14], even while the Rover's "computer reset" problems were being reported. You don't suppose it's running Windows 95, do you?

*Robb Wray  
Peterborough, N.H.  
rwwray@dim.net*

## Crying for poor Bill

**C**OMPUTERWORLD reader Mark Hoffman wrote to criticize Paul Gillin's Up Front column as unfair to Microsoft and Windows [Letters, CW, June 30]. Let's all cry buckets for poor Bill Gates. Even if you accept the market share figures—which are highly suspect given that the number of bundled "free" distribution copies was exceeded only by AOL's efforts to tile the globe—those numbers are not a defense for the poor quality of Microsoft products. Nor are they a valid explanation for Windows' success, which is a giant marketing coup. Neither is a substitute for quality coding or honest business practices.

*Glen T. Livezey  
Omaha, Neb.  
glivezey@netcom.usm.edu*

## Java is another Pet Rock

**I**T SEEMS TO ME that Java is a system for running under multiple systems, without taking advantage of any of the features that make me choose the system I do use.

It's basic for the '90s, if you will, that can only be accelerated significantly by compiling. Then it loses the elusive cross-platform compatibility that is its only selling point. Java is a fad that, with a little luck, will die out as quickly as Pet Rocks. And no, I'm not in any way connected with Microsoft.

*Wayne Liljestrom  
Worcester, Mass.*

## Word as replacement for HTML? Get real, Coursey

**I** FOUND COLUMNIST David Coursey's suggestion of replacing HTML with Microsoft Word's .doc format as an Internet/intranet document language puzzling and alarming ["HTML? How about Word instead?," CW, July 28].

Puzzling, because if I compare the size of an impressive-looking HTML document with that of an often-less-impressive Microsoft Word document, I'd much rather have the HTML document flying over my intranet or the Internet as a whole. Not to mention Word's lack of support for dynamic content.

I find it alarming for one of the reasons he admits: portability. If the .doc format were the standard, much of the richest content on the Web (that generated by users of operating systems other than Microsoft's)

## Hardball tactics viewed from both sides of the fence



**Y**OUR ARTICLE fairly explores one side of the selling situation, but we peddlers don't have an easy time of it either.

Many CIOs and other IS decision-makers are permanently on voice mail, where they ignore people and companies they don't know.

Where secretaries exist, they effectively buffer their bosses from the likes of people like me.

A smart salesperson (not entirely an oxymoron) knows how important the time of a top executive is.

Give us two minutes of phone access even if we don't sponsor the Olympics or take full page advertisements in *The Wall Street Journal* and *Computerworld*.

There are many fine niche players out there. Give us a chance to help.

*Alan Gotschall  
Director, sales and marketing  
Softpoint Systems, Inc.  
New York*

## X.500 and LDAP are complementary

**A**N ARTICLE in your May 19 issue ["LDAP standard seen overtaking X.500"] held only part of the story.

What some might see as Lightweight Directory Access Protocol (LDAP) as the answer to their directory service problems, most informed users aren't so sure.

LDAP is a superb access protocol to databases. It encompasses all facets of a directory service.

But LDAP still has major obstacles to overcome if it hopes to overtake X.500. Remember, it's not called "Lightweight" for nothing.

The reports of X.500's death have been greatly exaggerated. In fact, X.500 is the only way to develop large-scale, enterprise-wide directory service applications. That is why Siemens/Nadatel's DIX 4.0—an LDAP-enabled, fully compliant X.500 directory service product—runs under Windows NT and Unix. The case for LDAP and X.500 shouldn't focus on which is dominant, but rather, how do these two complementary technologies meet the users' needs.

*Andrew Heger, Director  
Siemens/Nadatel Information  
Systems, Inc.  
Burlington, Mass.*



## Readers provide their own suggestions about handhelds

**T**HE AGENCY of size and weight data in your review of handhelds leads me to suspect you overlooked a key aspect of these devices [CW Buyer's Guide, June 30].

Unlike all those shrunken-head laptops, the delightfully compact U.S. Robotics' Pilot fits in the palm of my hand. I can take notes while walking through a trade show or look up phone numbers with one thumb while I'm stuck in traffic.

Sure, the handwriting recognition misses a letter now and then. But I disagree strongly with your "very limited" assessment. I've even written a short article [using my Pilot and lived to tell about it. I've used various electronic gadgets for 20 years, and the Pilot is one of the most successful designs I've seen.

*George David  
David Group  
Seattle*

**T**HANKS FOR the article re-viewing handheld PCs.

However, the quick user comments on the last page ("My impression on...") were far more valuable than the four pages of now-and-then feature-by-feature ratings.

Living with one of these machines for a week is worth more than studying a dozen of them in a laboratory.

I carry the Newton now, which your lab rated last. And I just gave away the Sharp Zaurus that I used for more than a year.

The difference for me was the keyboard.

Your lab reviewer should be condemned to write his next review on the handheld he rated as No. 1.

*John Hicks  
New York*



would be lost or fragmented, rather than fully available to the user of any browser on any platform.

*Brian Long  
Milwaukee*

**I** WASN'T AWARE that you were moving David Coursey into the humor business. Word as a replacement for HTML? A simple "Hello, World" file is 19,476 bytes as opposed to the HTML equivalent of about 80.

As an HTML victim—and as there's much about it to despise—I don't think we're ready to inflict that kind of traffic multiplex (3502) on the Web.

You think people are complaining now about response time?

*Kevin Fletcher Thirley  
KFT Associates  
Oakland, Calif.*



...true measure of its  
After all, without the  
collect precious data  
a computer would  
than an expensive

Not too long ago, companies  
stored their data the way they stored  
their hard goods—in out-of-the-way  
warehouses where the real estate  
was the cheapest. But companies  
all types are becoming increasingly  
aware that accessible, centrally lo-  
cated data warehouses are crucial  
cogs in the business machine. "Stor-  
age is becoming much more strate-  
gic as a component in the IT envi-  
ronment," says Daniel Gross, director

Data warehouses are becoming  
strategically vital to a business's  
success. But the truth is, many are  
outgrown right after they're delivered.  
They're simply overwhelmed by  
ever-increasing amounts of data. Unless  
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face of explosive growth. And it's  
the only way to refresh data from  
multiple sources without sacrificing  
performance. To find out how  
a data warehouse with EMC

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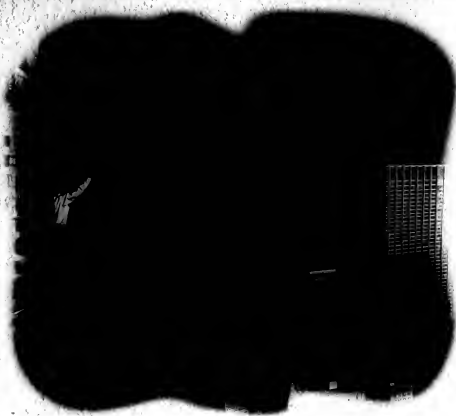
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needs of your business,

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## Corporate Strategies

## Briefs

## If you can't get techies to training ...

## Companies bring multimedia classes in-house

By Julia King

TRAINING IS one of the big carrots companies hold out to snag hard-to-hire technical and other professionals. Yet once they're on the job, workers frequently find it impossible to drop out of critical projects to attend classes to learn new skills.

To solve this dilemma, more companies are bringing high-tech and other training in-house, installing multimedia-

based desktops and sophisticated learning laboratories where workers can get less costly training as needed.

By the year 2000, 77% of all Fortune 1,000 employees will have access to multimedia-equipped workstations.

Those workers will receive almost 40% of all training via CD-ROM, the Internet or a corporate intranet, according to a recent study by Chicago-based OmniTech Consulting Group, Inc.

Multimedia training workstations are being used in four employee desktops at first, says 1,000 firms, according to OmniTech.

And more than one-fourth of companies have already set up special departments to create and produce multimedia-based training. Another 19% of companies plan similar units in the next few years, thus increasing the availability of custom training.

## WHERE'S IT?

But there is a trap.

IS groups frequently are left out of the loop when much-

needed training technologies are acquired or implemented. The upshot has been costly redundant networks — along with incompatible technologies and hard feelings all around.

"Training departments don't want to be dependent on IS for fear they'll never get the work done. IS already has so many projects in line that when there is a training problem, it gets pushed to the bottom of the list."

in-house, page 42

## Insurer uses groupware to cut back claims work

By Barb Cole-Gonzalez

AN INTERNATIONAL insurance company that makes its money managing risk is taking a safe approach to workflow and document imaging: It's leveraging its messaging and groupware system.

For less than \$500,000 — about half the cost of a dedicated document imaging installation — New York-based Swiss Reinsurance America (Swiss Re) has deployed a claims-processing application to more than 300 workers, reduced the number of steps needed to process a claim from 18 to seven; and reduced the time it takes to process a claim from three days to one.

Swiss Re plans to deploy the same application with minor modifications to other departments and to foreign subsidiaries of the company.

Swiss Re said the application

will improve its ability to provide complete and timely information to all its departments and reduce its reliance on paper.

"Lots of people came in here and gave us estimates of over \$2 million [to build the system]," said David Baruch, manager of systems at Swiss Re. Such figures aren't unusual because applications such as Swiss Re's require expensive hardware, including scanners and jukeboxes, for storing images.

Several factors enabled Swiss Re to complete its application for substantially less money than many predicted. First, instead of purchasing a stand-

alone, page 42



Swiss Re's David Baruch: Hiring an adept integrator helped smooth the process



A \$300,000 decision-support system is helping executives at Pizzeria Uno react faster to labor and materials costs

## Pizzeria Uno cuts slice from cost pie

By Thomas Hoffman

EXECUTIVES in the casual dining market can ill afford to be casual about controlling costs in a low-margin business, where even one day of labor overruns can wipe out a week's worth of profits.

To keep better tabs on its 150 restaurants, Pizzeria Uno has installed a \$300,000 decision-support system that enables its top executives and regional managers to micromanage the company's labor and materials costs more effectively.

Armed with more detailed cost information about cheese and wine on a daily basis, Pizzeria Uno executives can react faster to changing conditions and can control and improve the company's profit margins.

The system "helps us man-

imize profits from stores, because executives can monitor the performance of these stores better" than they can by reading a monthly profit-and-loss statement, said Alan LaRatte, vice president of information systems at the \$400 million, publicly

held restaurant chain. LaRatte placed the company's profits margins at about 5% of sales.

Most fast-food and chain restaurants poll their outlets each night for sales receipts. But compared with its retail industry cousins — many of which use sophisticated data mining tools to determine, for example, who is buying beer in Kenosha, Wis., from 7 to 9 p.m. on Fridays — most players in the casual dining arena are technological laggards, industry experts said.

Uno, page 42

## DECISION-SUPPORT TOOLS



## Corporate Strategies

### Briefs

#### Retailer, IBM in pact

TruServ Corp., a \$4.5 billion hardware/retailer center wholesaler based in Chicago, has signed a \$32 million IT services agreement with IBM. Under the agreement, IBM will provide TruServ with information technology services that include application development; maintenance services for business operations, including inventory, accounting and human resources; help desk services; and desktop support.

#### On Britannica

Encyclopædia Britannica, a Portland, Ore.-based supplier of telephone, fax and Internet-based technical support, last week inked a deal with Encyclopædia Britannica, Inc. to provide help desk services for Britannica's CD-ROM version of the encyclopedia.

#### Mayo Clinic automates

The Mayo Clinic in Rochester, Minn., has purchased Picta CardioScan 97 to automate operating room activities and its pre- and post-operative plans. In the first phase, Seattle-based Picta this fall will automate the cardiovascular and vascular surgery operating rooms at St. Mary's Hospital, a Mayo Clinic facility. Other sites will be phased in during the next three years.

Computer companies contributed \$7.3 million to federal-level candidates in the 1996 elections. The following were the top three contributors:

Electronic Data Systems Corp., Fram, Mass.	\$309,449
Peter Tech International, Miami	\$382,500
ENC Corp., Hollywood, Fla.	\$311,709

Source: Center for Responsive Politics, Washington

## If you can't get techies to training ...

### Companies bring multimedia classes in-house

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And more than one-fourth of companies have already set up special departments to create and produce multimedia-based training. Another 15% of companies plan similar units in the next few years, thus increasing the availability of custom training.

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In-house, page 42

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Most fast-food and chain restaurants "pull their outlets each night for sales receipts. But compared with its retail industry cousins — many of which use sophisticated data mining tools to determine, for example, who is buying beer in Kenosha, Wis. from 7 to 9 p.m. on Fridays — most players in the casual dining arena are technological laggards," industry experts said.

Out, page 42



## In-house training is gaining favor

CONTINUED FROM PAGE 41

des," said John Fuier, a principal at OmniTech.

To get around these pitfalls, training and IS managers at Prudential Insurance Company of America, Inc. decided from the very beginning that they would work together on a new multimedia-based learning lab.

The lab opened last week at the company's Roseland, N.J., site. It is the first of eight multimedia facilities the company plans to open during the next year.

Prudential wants to eventually deliver all training over the Internet direct to multimedia-based workstations on employees' desktops.

### LITTLE YENTON

"We have a leg up on most companies because of how we're organized," said Chief Information Officer Bill Fried, referring to Prudential's systems and operations division. That group encompasses IS and training functions for the entire

55,000-employee company.

At most other companies, training and IS organizations maintain a "stovepipe" relationship, and there is a natural tension between the two groups, Fried said.

At Prudential, IS also has a big stake in the multimedia lab because it plans to use the facility to retrain its own staffers in new technologies.

Julie Anstetter, vice president of training and learning systems at Anstetter, Inc., an electronics and networks manufacturer in Chicago, said cooperation between IS and training is essential to the success of any multimedia-based training program.

Anstetter is rolling out such a program to several thousand salespeople in 300 locations worldwide.

For example, it was Anstetter's IS group that red-flagged the company's multiple computing platforms and operating systems as a major training system development issue. Anstetter



Source: Bradford Consulting Group, Inc., Chicago

said.

"The bottom line is if you don't turner early in the project and intimately with your information systems department, you will fail. I don't know how to say it any more strongly," she said. □

## Insurer uses groupware

CONTINUED FROM PAGE 41

alone document imaging and workflow system, Swiss Re used its Lotus Development Corp. Notes network as the underpinning of the application. The company has more than 7,000 Notes seats worldwide, which means a familiar environment for the company's application developers, no new client software and a well-known interface for end users. By using the Internet hooks in the Lotus Domino server, the company expects to eventually interact directly with its customers online.

### DOWNSIDE

Leveraging the messaging network helped keep costs down, but it wasn't without drawbacks. Swiss Re had a heavy integration job on its hands, because there were no existing hooks between Notes and the Network Imaging Corp. imaging software it selected.

And although Notes supports workflow, there was no prebuilt application that could be customized to meet Swiss Re's requirements. The insurance giant had to first examine its business processes and build an

application that mirrored the manual flow of paper in the organization.

But the Notes infrastructure did let the company modify the application easily and import information from news services and company databases.

Baruch said hiring an integrator, Lockheed Martin Information Systems & Technologies in King of Prussia, Pa., that was adept at project management helped make the application a success. Hugh Bishop, an analyst at Aberdeen Group, Inc. in Boston, said Lockheed's experience managing large government contracts helps prevent "projects from going off into a tailspin."

Swiss Re completed its application in a few months. That was partly because it did a lot of the customer programming in C++, building a set of components that could be reused. Those components will be recycled when it takes the application to its sister firms in Europe. "We will be able to take an application from one company and transfer it to another with minor changes," Baruch said. □

## U.K. company acquires Medic

By Kristi Enick  
LONDON

**U.S. BANKING AND INSURANCE** software company Mays PLC last week said it will acquire U.S. medical software developer Medic Computer Systems, Inc. for \$524.8 million, or \$35 per share. Mays is keen to capitalize on the rapidly expanding U.S. market for health care software systems.

Officials said its acquisition of Medic, one of the top five health care information technology companies in the U.S., will position it to do so.

The acquisition, one of several for Mays in the past few years, is a sharp departure from the company's core business of providing banking and insurance software. Raleigh, N.C.-based Medic provides application packages to the U.S. health care industry. The merger is expected to be completed next month, officials said. □

Enick writes for the *IDG News Service* in London.

## Uno finds way to get bigger slice of profits

CONTINUED FROM PAGE 41

Companies in the casual dining sector "don't necessarily embrace technology," said Daniel P. Pizzo, editor in chief of *Restaurants and Institutions* magazine, a bimonthly food service publication based in Des Plaines, Ill.

Pizzo points to the supermarket industry, which uses frequent-buyer cards to record every purchase that shoppers make.

The only system close to monitoring diners' purchases in the restaurant business is a system developed recently by New York-based American Express Co. that has gained limited acceptance by technology-averse restaurateurs, Pizzo said.

Not so at Uno Restaurants Corp., the Boston-based parent company for Pizzeria Uno, which in October 1995 began installing Pilot Analysis Server from Cambridge, Mass.-based Pilot Software. The online analytical processing system replaced a manual system used to track and report restaurant performance, costs and labor

information.

Prior to using Pilot, each evening restaurant managers would leave voice messages about daily sales figures for their regional managers.

The following day, regional managers would spend up to 90 minutes pulling those figures off voice mail and compiling the results.

Now, those sales figures are sent each night to a Hewlett-Packard Co. HP 9000 server and disseminated via Pilot software the next morning. Regional managers in this way can roll out of bed, dial in to the system with laptop PCs and access daily sales figures immediately, LaBette said.

Key to the success of the project is Pizzeria Uno's use of Pilot's multidimensional database system, which allows management to slice and dice sales and cost data in a variety of ways — such as by region, regional manager and by which restaurants have been open for at least a year.

The differences between a

multidimensional database and an online transaction processing (OLTP) environment such as Oracle Corp. "are subtle," because there are tools that will let OLTP databases view data in different ways, LaBette said.

But OLTP databases "don't work as well" when you're trying to extract data and "twirl" it.

**With a new system, Uno's regional managers can**

**now roll out of bed, dial in to the system with laptop PCs and access daily sales figures immediately.**

LaBette said. Multidimensional systems are better at executing commands such as "Show me sales figures for Boston-area stores" and "Show me sales figures for stores run by Boston's regional managers," LaBette said.

Staffing was LaBette's biggest challenge with the project. With

just eight full-time IS staffers, Pizzeria Uno was forced to hire two Pilot consultants to help implement and customize the system.

"We had intended to do more of the development work ourselves, but we ended up with good results," he said.

LaBette said he hasn't tried to figure out how much money the system has saved the company.

But he said the system is providing Pizzeria Uno executives better, more timely information than their chief rivals, such as T.G.I. Fridays, owned by Fridays Hospitality Worldwide, Inc. in Dallas and Chili's Grille, owned by Brinker International, also in Dallas.

Without the system, "it makes it much more difficult [for Uno's executives] to manage the data the way we need to," LaBette said. "There's a lot of low-tech things going on out there [in the restaurant industry], and I think we stand up better than most of our competitors." □

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# Hong Kong banks form their plans for year 2000

By Jacqueline Mailoux  
Hong Kong

MOST OF HONG KONG'S financial institutions have taken the potentially catastrophic year 2000 problem seriously and have started implementing a strategy to convert legacy systems.

Although awareness has improved, some organizations may not have fully considered the implications associated

with the date-field problem, according to the Hong Kong Monetary Authority.

To date, only 11% of financial institutions have confirmed that their information technology systems are year 2000-compliant, according to a recent survey conducted by the Monetary Authority.

And while most of the territory's financial institutions have submitted reports to the Monetary Authority outlining their year 2000 strategies, there are

## About 14% of Hong Kong's financial institutions have yet to specify a date for year 2000 compliance.

still a few that have yet to do so, said a spokesman for the regulatory body.

The Monetary Authority is taking an active supervisory role in the year 2000 issue, citing the potential effect on the stability of Hong Kong's robust financial sector. In May, the authority sent a questionnaire to all 365 authorized financial institutions in the territory; 363 institutions responded, with the nonresponding firms indicating that they intend to cease operations by year's end. The survey results were released last month.

While the majority of financial organizations have yet to get their mission-critical systems compliant, companies have looked more closely into the task at hand, the survey found. For mission-critical systems, 84% of the institutions surveyed expect to have year 2000 compliance by the end of next year — which allows for time to sort out unanticipated problems and conduct further testing, a spokesman said. An additional 4% are aiming for the end of 1999 for mission-critical system compliance, according to

the survey. Yet 14% of institutions — or 49 organizations in Hong Kong's financial community — have yet to specify a target date for year 2000 compliance, the survey said. The Monetary Authority has noted that it will work with those institutions to determine the reason for this failure to establish expected completion dates.

Most institutions that have already set a deadline for year 2000 work have either begun or will begin renovation of code this year. However, 18% of respondents plan to start conversion work as late as next year, while another 24% haven't yet specified a start date.

A majority of institutions — about 77% — have formed management teams to steer the conversion work. Top management is involved in its out of 10 of the financial organizations surveyed.

The average expected cost for a year 2000 project is \$465,000, based on the responses of 139 institutions that could provide the information. Three quarters of Hong Kong financial institutions have or will establish contingency plans in case of a system failure. So far, only 30% of the institutions surveyed have considered insurance coverage for losses that may result from the year 2000 problem.

Mailoux is assistant editor of Computerworld Hong Kong.

## Poll: Execs see returns from Web

By Rebecca Sykes  
Boston

CORPORATE WORLD WIDE Web sites are crucial for competing in the '90s, but not because they help sell more products, according to a survey of 100 Fortune 1,000 executives.

Almost nine out of 10 respondents said companies must have a Web site to stay in the game today, but only 34% cited increased product sales as a Web-site benefit, said Art Williams, president and CEO of Spiral Media, Inc., a Web development company in New York that initiated the study.

The most important benefits of Web sites were improved communications, cited by 58% of executives, and increased company and brand recognition, Williams said. And 47% said improved customer service was a main benefit, he said. For the poll, Spiral Media consid-

ered intranets, extranets and publicly accessible Web sites as types of sites, and the improved communication benefit cited by almost three quarters of respondents reflects that fact. Williams said. Specifically, 34% of respondents said intranets had yielded a greater return on investment, with 29% selecting extranets, he said. Companies cited intranets and extranets as yielding a greater return on investment than publicly accessible Web sites.

Better communication — both internally through intranets and with suppliers through extranets — was the prime benefit, Williams said. But executives did credit their public Web sites with some benefits, including brand recognition (noted by 76%) and better customer relations (72%), Williams said. □

Sykes writes for the IDG News Service in Boston.

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## Currency switch may trip up vendors

By Ron Cowdon  
London

ONGOING DOUBTS over the precise implementation of European Monetary Union are leaving software suppliers and software users in confusion.

The European Commission plans to introduce the new pan-European currency, the euro, in January 1999, and will give participating countries three and a half years to complete the changeover from their local currencies.

But accommodating the euro during the transition period and later in computer systems is proving difficult, according to Dennis Keeling, a consultant who is coordinating the efforts of the accounting industry.

"No one [at the European Commission] will tell us what we've got to do yet," said Keeling, who is chairman of a working committee set up by BASDA, the Business and Accounting Software Developers Association.

The main problem is that during the transition period, companies will have to run dual-currency accounting systems, supporting both the local currency and the euro. That will create a whole range of problems, many of which are just emerging as developers strategize over what needs to be done.

For example, new fields will have to be added to database records to cope with dual currencies. In addition, European Commission rules stipulate that there should be no gain or loss in the currency conversion — something that is hard to achieve when companies round prices up or down.

BASDA member companies — which include SAP AG, The Baan Co., Oracle Corp., PeopleSoft, Inc. and J. D. Edwards & Co. — had initially thought the process would be easy but have changed their minds as they realized they would have to modify not only general ledger applications, but also order processing, purchasing and historical analysis software. Keeling said.

As part of his research for London consulting firm Ovum Ltd., Keeling assessed 20 international packages against a range of technical and business criteria. He concluded that SAP and Baan are ahead of the pack on euro compliance because they have understood the international requirements very well, he said.

Oracle, on the other hand, may lag on both the euro and year 2000 problems because Version 11 of its applications software is late, Keeling said. □

Cowdon writes for the IDG News Service in London.

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## Applications that gather dust. Technology that's ignored. IS groups will continue to ignore users until they pay attention to Information

**H**ughes Space and Communications Co., the world's largest producer of satellites, had a good problem and a bad problem.

The good problem was that it needed to build more satellites in a shorter time than ever before. The bad problem was poor production scheduling: some work cells were overloaded while others sat empty. Nobody seemed to have accurate scheduling information.

Hughes' information technology profes-

sionals concluded that a new common scheduling system was necessary and installed an expensive mainframe package. No one used it. Reasoning that the problem was the difficult-to-use mainframe interface, at great expense, they trashed the first system and built a client/server, graphical user interface scheduling system on top of Microsoft Corp.'s Project. Again, no one used it.

After detailed analysis, the project manager realized the problem was information behavior — how people approach and handle information. At Hughes, for example,

work cell managers were penalized when the schedule showed they would be late, so they kept mum about delays. They saw scheduling information as a powerful token to use in the organization's political negotiations.

The situation changed when the IT organization dealt with the politics head-on, getting work cell managers to discuss what information they'd be willing to share and convincing senior management to stop punishing those who admitted to being late. The second system is now being used. Best of all, the company continues its record of never missing a launch date.

Few would question that information behavior is important to the success of information systems. But in most companies, the

Almost every IT professional knows of systems that did not meet their business objectives because of "incorrect" information behaviors by users. But neither the words "information behavior" nor any real synonyms ever appear in development methodologies, joint application design sessions or project team meetings.

IT professionals may not feel ready to change users' information behaviors. But several key steps will make good information behaviors more likely. If we in IS don't do it, no one will — and we'll continue to build systems that aren't used, install technologies that aren't understood and distribute information that's ignored.

The greatest benefit from thinking about

## ologies no one understands. Information continue to build systems that beg for Information Behavior.

questions of how people search for, use, modify and share information — or how they hoard and ignore it — have been ignored.

Take a simple example: how people read electronic mail. One user plows through each message in turn, answers each immediately and files saved messages in subject folders. Another picks through his in-box, puts off responses until later and leaves saved messages in a huge, undifferentiated pile. Same technology, same information, but different behaviors, and one is much better than the other.

information behavior may be in canceling projects that won't work. Senior managers will have increased respect for IT professionals when we start saying, "This system shouldn't be built because it won't be used," or "This system would be a lot more effective if we used simpler, existing technologies and focused on the information instead."

Information behavior affects how we plan, develop and implement technologies. If we want to succeed with these activities, we must be aware of the laws of information behavior.



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# 1.

## Information Behavior In Planning

**P**lanning for information is a key task of the information professional. We create models, architectures, policies and standards to govern how information flows around the organization. Attempts to create information architecture in particular have failed miserably because they frequently violate the first law of information behavior:

**INFORMATION PLANS MUST BE SIMPLE AND EASILY UNDERSTOOD TO HAVE ANY LIKELIHOOD OF AFFECTING BEHAVIOR.**

The complex models that accompany information architectures are typically understood only by their creators. Often, even other IT professionals don't

understand them. As a result, they don't change anyone's behavior. Both users and IT professionals build "renegade" systems because the plans and architectures make no sense to them. In "real" architecture, architects have detailed blueprints for buildings, but they use less complex sketches to discuss with the client how the structure will look and feel. Information architects ought to follow their example.

**KEEP PLANS SMALL SO MANAGERS CAN GET INVOLVED IN SHAPING THEM.**

Information planning for entire enterprises has a particularly poor success record. For example, managers at Xerox Corp. say they tried it for 25 years and never succeeded. Most users don't care about what information the enterprise uses, only their part of it. While some information must be common so it can be shared across a corporation, it's rare that all of it needs to be. The best information plans concern small business units where line managers can debate what information is needed and what terminology should be used and match information objectives to business plans. If they participate in the planning, there's a much greater likelihood they'll abide by the finished plan.

**DETERMINE WHAT INFORMATION BEHAVIORS YOU NEED.**

If you don't know what behaviors you need, you probably won't get them. Identifying what behaviors are needed should be part of the planning process. If you're planning a group calendaring system, think about the behaviors you will have to encourage: getting people to check their calendars every morning, fill out all the neces-

sary information and not schedule other people to attend a meeting without asking them directly. When the desired behaviors are identified, ways to encourage, elicit and measure them can also be created.

The best example of such planning is at American Airlines. After years of more traditional (and generally unsuccessful) data modeling aimed at creating common information, American's IT professionals began planning within small business units — Sabre Travel Information Network or the airplane maintenance business — and kept the resulting information models on one page. They used the language of the business and involved key managers in planning meetings. They identified behavioral objectives of the planning exercise, most notably getting managers to realize their information creation and use activities overlapped. ("You do a demand forecast? So do I. Let's cooperate on one.") The process was simple and straightforward and led to sharing and consensus on common data that American's IT professionals wanted.



# 2.

## Information Behavior In System Development

**M**ost of what information professionals do today involves developing specific systems for managing information. These systems are typically quite capable from a technological stand-



## Other Assorted Laws of Information Behavior

• The more an organization knows and cares about a particular business entity, the less likely its members are to agree on a common term and meaning for it.

• Information and knowledge sharing are unusual acts; they can be encouraged, but they don't happen automatically.

• We exchange information most readily with those whose desks are within 90 feet of ours.

• Information consumption is a zero-sum game; if we consume more of one type, we'll probably consume less of another.

• Companies that achieve rapid, early success

are likely to have cultures that emphasize isolation over information.

• Virtual information on printers or screens is one of the least engaging forms of communication, and graphics are little better; more active information roles (discussing, simulating, etc.) lead to higher engagement.



point but may ignore some other laws of information behavior. For example:

### PEOPLE DON'T KNOW WHAT INFORMATION THEY NEED.

For years, a key method of determining information requirements was simply to ask people what information they needed. But it's well-known that few managers or employees have a good handle on their own information needs. Prototyping, of course, has been a great help in this regard; it's much easier for users to look at a screen and say, "No, that's not it," or "It would be better if you added this field." But it's hard to build a prototype unless you have a fairly good idea of the required information.

Rather than asking what information is needed, it's often most useful to simply observe people as they work. This way you can see what information they need. This approach, which is sometimes called "shadowing," requires information profes-

sionals who can make inferences about information requirements from work processes.

### HUMANS PREFER INFORMATION AND KNOWLEDGE OVER DATA.

For 40 years we've managed data and called it information. But people prefer richer information diets — information with human context, experience, insight and elaboration. Increasingly, we call this "knowledge" and the systems that manage it, "knowledge management" systems. Whatever we call the systems we build, we should try to capture and process not only numbers but the contextual text, graphics and even video that add information value. Of course, the intelligence and knowledge embodied in such systems originate in peoples' heads and extracting it involves even more behavioral issues.

### INFORMATION DESIRES CHANGE OVER TIME.

Computer science classes taught us that processes may vary over

time, but information stays constant. Dead wrong. The information we want changes over time, sometimes dramatically. New business requirements, new organizational structures, new business process designs all lead to new information requirements. But in the IS community, we are notorious for pouring "Cobol concrete" around businesses. Information professionals who are aware of information behavior will attempt to build as much flexibility as possible into information systems. They don't overengineer systems and frequently ask their customers, "What's changed since we last talked?"

An excellent example is Hoffmann-La Roche, the global pharmaceutical company in Basel, Switzerland. In building a system for the new drug development process, it hired anthropologists to shadow key researchers and learn what information they might find useful. The system modeled not only information flows but also the





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knowledge about what makes a drug successful with regulators and in the marketplace. The system is continually evolving, and although it's only 2 years old, it has gone through several versions. Most importantly, new drugs are coming out an average of six months earlier. Hoffman-LaRoche's system was also behaviorally-oriented while in planning mode, with high levels of involvement by scientists and other stakeholders. The information flows were originally recorded in a highly structured set of paper books because that was viewed as the best way to engage the users of the information and knowledge. Then they were put into a computer system that was easy to modify.

### 3. Applying Technologies to Information Problems

**M**any IT professionals view their primary job as installing technology to solve information problems. But even when the focus is on technology, it is possible to let behavior play a strong role. Organizations and individuals have preferences for particular technologies that may be independent of technical merits. Information professionals must give technology its due while focusing heavily on the interaction between human traits and technological opportunities. In doing so, they should be conscious of the following laws:

#### KNOW YOUR ORGANIZATION'S TECHNOLOGY PREFERENCES.

Every organization leans toward particular technologies for processing and communicating information. I've come across E-mail cultures, voice-mail cultures, spreadsheet cultures and even overhead transparency cultures. The reasons for these preferences may be buried in history or the actions of influential individuals. The biases may be well-suited to the organization's needs or may seem irrational. For example, I once worked at a consulting firm with a strong E-mail culture even though the consultants traveled often and, in those prelaptop days, didn't have access to E-mail. Such cultures can be changed, but it takes time and power, and information professionals may not be well-positioned to create such changes. Get familiar with the technology preferences of your culture. You tinker with them at your own peril.

#### KEEP THE TECHNOLOGY SIMPLE.

This law applies to much of our lives, but it is often violated with regard to technology. Many systems exceed the ability of users

to understand and use them effectively on a daily basis. Complex functions won't be used by most people. Witness the many functions of Lotus Development Corp.'s Notes that go unused in most firms. Even the most basic personal productivity software is called "bloatware" because it's overloaded with unnecessary functions.

IT professionals should strive to simplify technology environments and build only the necessary capabilities into systems and architectures. It may even be desirable to outsource some complex technological responsibilities in order to focus on information and behavior issues. Equifax, Inc., the Atlanta-based business information provider, points to its outsourcing of data center and network functions as the primary factor in a flowering of new information products and services based on credit information.

#### DON'T JUST TRAIN, EDUCATE.

Most organizations offer training on how to use technologies. It's generally adequate at best; many users have only a dim view of how to use particular software





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and hardware capabilities. For example, think about the uncertain response you probably received the last time you asked someone to transfer you to another extension — and we've been able to transfer calls for more than 20 years.

What's particularly lacking, however, is education on how technology and information can be used effectively in the context of particular jobs and companies. Users are on their own to figure out how best to use information to meet their job objectives. Education is more difficult to develop and deliver than generic training, but it's far more valuable.

Consider Verifone, Inc., a fast-growing point-of-sale technology firm in Redwood City, Calif., that was recently acquired by Hewlett-Packard Co. Will Pape, formerly Verifone's chief information officer, said he believes in using the appropriate technology. "You don't need a Ferrari to drive to the grocery store, and you don't need a Pentium to do word processing," he argues. Those who need advanced technologies can get them, but most employees don't need them.

Verifone hasn't outsourced, but its technology environment is as simple as can be. Many applications are built on top of an old Digital Equipment Corp. VAX-based E-mail system. The

company puts its primary effort into educating people about how to work effectively using its technologies and applications; 160 "information tools" have been constructed to allow access to and analysis of information; *Viewing* is for viewing and analysis of Verifone financial performance; *Today* is a source for internal communications documents such as newsletters and job postings; and *VF Inn* contains the itineraries of employees who are traveling.

Verifone makes its technology preferences clear. The entire organization runs on E-mail and networked applications, and new employees are told about the need for mastering the technology before they start work.

As these examples illustrate, there's a lot more to building effective information environments than just throwing a computer at the problems. Putting in an intranet will not make employees care any more about the personnel manual than they did with the paper version. Lotus Notes will not necessarily lead to more information sharing.

Humans beings are remarkably ingenious in their ability to ignore, work around or subvert information initiatives that they don't see as being in their best interest.

It's time to stop cursing these recalcitrant customers and take their information behaviors seriously. ■

### ABOUT THE AUTHOR:

Thomas H. Davenport is a professor and director of the information management MBA program at the University of Texas at Austin. His new book, *Information Ecology: Mastering the Information and Knowledge Environment* (Oxford University Press), describes how information behavior and other new factors can lead to more effective information management. Working Knowledge (Harvard Business School Press) with Larry Frank will be published in November. His E-mail address is [tdavenport@utmsi.utexas.edu](mailto:tdavenport@utmsi.utexas.edu).

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Theft by employees/authorized users	19%
Hacker spoofing	14%
Virus targeting your organization	11%
Denial-of-service attack	11%
Hacker vandalism	7%
Hacker theft	5%

Source: IDC IS professionals

NOTE: Comments represent security issues

## Online retailers buddy up

By Mitch Wagner

LIKE CHILDREN holding hands before they cross a dangerous street, companies are joining in deep partnerships to help one another exploit the Internet for electronic commerce.

Barnes & Noble, Inc. in New York last week announced it will launch an affiliates program

that encourages sites to build their own online bookstores, with links back to Barnes & Noble. The online bookstore will handle the order processing, payment and shipping and give a cut to the affiliate.

"What we get from this is distribution over the Internet of what our offerings are as a book seller and incredible traffic lev-

els to the site," said Susan Boster, director of marketing at BarnesandNoble.com.

Boster said that with help from Barnes & Noble, thousands of small online specialty bookstores will crop up. Barnes & Noble is one-upping online competitor Amazon.com, Inc. by offering affiliates a cut of all Online retailers, page 31

## DATA PROTECTION Software guards against bad applets

By Sharon Mighlin

THE LEADING antivirus company is moving into the home applet protection business, offering a free download of software aimed at safeguarding data from rogue code on the Internet.

Symantec Corp.'s Norton Safe on the Web, available at [www.symantec.com/nw/secure](http://www.symantec.com/nw/secure), lets users restrict access to their files.

For example, users can configure the software to bar any program except Microsoft Corp.'s Word from accessing \*.doc files or allow only Quicken to tap in to financial data. That was designed to prevent hackers from stealing ActiveX controls to snop through and send back information from personal files. The software also includes electronic-mail encryption capabilities.

"I think it's a really good idea for a product," said beta-tester Scott Fringer, a network systems analyst at the University of Florida.

Data protection, page 50

**Norton Safe on the Web was easy and intuitive to configure.**  
— Scott Fringer, Shands Hospital

## Bank invests in online technology

► Bank of America tries to lure customers with Web-based data

By Sharon Gordin

COME ARE THE days of bankers' hours.

Bank of America hopes to retain and recruit new customers by letting them get account information when and where they want it.

The bank is using specialized, object-oriented middleware developed by its Concordia Solutions information technology subsidiary to deliver a wide range of customer information to tellers or customers via World Wide Web browsers. And bank executives said they hope that will give them an edge in the highly competitive and dynamic

Bank, page 53

Concordia Solutions CEO Isaac Applebaum: Bank of America wanted to give customers information from many sources

## Java browser combines HotJava with HTML rendering

By Carol Shian

SUN MICROSYSTEMS, INC. and Netscape Communications Corp. recently announced they will work together on a "100% Pure Java" World Wide Web browser that runs on PCs and network computers.

But the piece that most intrigued is the notion of being able to embed a Hypertext Markup Language (HTML) rendering engine in the form of a JavaBean component in custom applications so users can view documents without hav-

ing to launch a browser.

The HTML rendering component will be included in Sun's Java Development Kit, which helps programmers build Java applications.

"That would be nice," said Motti Goldberg, chief architect at US West Communications. He said his company might use it to give users access to help desk files or provide links to other applications. "I'm sure a good programmer could probably do it now," Goldberg said.

Boris Galinsky, president of Ilog, Inc. in Summit, N.J.,

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Microsoft Corp.'s Internet Explorer 3.0 can be embedded in an application as an ActiveX control, said Totti Johnston, Microsoft's group product manager. But that can be done only in Windows 95 or Windows NT.

The pure Java browser will combine Sun's HotJava development with Netscape's HTML rendering engine.

Java browser, page 53

Like a Java browser because it can run on all platforms





# The Internet

Electronic Commerce • The World Wide Web • intranets

## Briefs

What security problems have you had in the past 12 months?

Virus introduced accidentally	73%
Hacker browsing with no impact	31%
Theft by employees/authorized users	19%
Hacker spoofing	14%
Virus targeting your organization	11%
Denial-of-service attack	11%
Hacker vandalism	7%
Hacker theft	5%

Base: ISO IS professionals

Source: Computerworld Internet Security Survey

### Online store search

Dunstan Thomas Ltd. plans to introduce a service designed to boost electronic commerce by making it easier for a company's customers to find the company.

Dunstan Thomas plans to roll out Shopping Explorer, an Internet search engine that specifically searches for retail sites on the World Wide Web. The service requires a special software client that consumers can license at a cost of \$39.99.

### Digital aims at Web

Officials at Digital Equipment Corp. in Maynard, Mass., last week said the company is teaming with Wells Fargo & Co., Microsoft Corp. and VeriFone, Inc. to offer VirtualStore. It is a complete Internet-storefront package that includes payment processing, hardware, software and services.

VirtualStore will include a Pentium Pro-based Pricer server running a Microsoft Site Server Enterprise Edition storefront and credit-card processing from Wells Fargo using VeriFone's VPOS merchant software. Pricing starts at \$48,000. VirtualStore is available immediately.

## Online retailers buddy up

By Mitch Wagner

LIKE CHLOREX holding hands before they cross a dangerous street, companies are joining in deep partnerships to help one another exploit the Internet for electronic commerce.

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that encourages sites to build their own online bookstores, with links back to Barnes & Noble. The online bookseller will handle the order processing, payment and shipping and give a cut to the affiliate.

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Java browser, page 53



Like a Java browser, HotJava can run on all platforms

# Data protection

CONTINUED FROM PAGE 49

da's Shands Hospital in Gainesville, Fla. Cupertino, Calif.-based Symantec's software joined antivirus packages such as WebScanX from McAfee Associates, Inc. in Santa Clara, Calif., and ESafe Pro-

tection from ESafe Technologies, Inc. in Seattle in targeting malicious Java and ActiveX code. Other security software, notably SurfingGate from Finjan, Inc. in San Francisco, also is aimed at screening

out damaging code from the World Wide Web.

Fringer said the Norton software was easy and intuitive to configure. He said it would be useful for novice Internet users who might not be careful about the sites they visit.

But Symantec's Norton Safe on the Web is currently for desktops only, requiring information systems staff to configure it for each user — a time-consuming task

for a large organization, said Jim Hurley, director of operating environments at Aberdeen Group, Inc. in Boston.

"They're just getting to market with the technology," Hurley said. "I am running into clients opting to defer right now" and wait for software with better central-management capabilities.

A Symantec spokesman said the first iteration of Norton Safe on the Web is aimed at building mind share among customers who may have heard about potential software threats on the Web. He declined to discuss future pricing plans or development directions for the product.

## LITTLE REPORTED DAMAGE

There have been few reports of actual damage from blackhat applets or controls, although the threats have been shown in demonstrations. For example, earlier this year a widely publicized German computer club demonstrated an ActiveX control that rifled through computers looking for Quicken; it would then use Quicken to create a financial transaction and send money to its creator's account. Quicken is a PC application for personal finances from Intuit, Inc. in Mountain View, Calif.

Although aware of the theoretical threats, many users seem to be waiting for more data on actual dangers before turning to software that will scan Java applets for content or restrict ActiveX access on user machines.

"It's something that we're looking at and probably will do in the future," said Alan Daniel, a senior systems analyst of network systems at United Stationers, Inc. in Des Plaines, Ill. "Right now, we haven't had any issues regarding that."

## SHORTS

### Web security

Netegrity, Inc. in Waltham, Mass., last week released SiteMinder 2.0, which lets companies deploy secure Web applications for distributing confidential material over the Internet. SiteMinder 2.0's policy-based approach to managing security privileges improves users' ability to develop and manage corporate intranets. SiteMinder 2.0 is available now. Pricing for SiteMinder Server begins at \$5,995 for 500 users. The SiteMinder Web Agent costs \$595 per Web server.

### Predicting push impact

Ganymede Software, Inc. in Morrisville, N.C., now offers scripts for its Chariot network test tool that can help managers predict the impact of push products. Before opening a wide-area network or Internet to news feeds and software update services, managers can analyze the current traffic load to determine how much bandwidth will increase and application performance will decrease. Chariot starts at \$11,000.



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## Online retailers

CONTINUED FROM PAGE A9

the books a referred customer buys at the bookstore site during a visit, rather than just the single book recommended by the other site.

"Amazon is focused on having their associates pick and choose individual books. As a consequence, those partners only get a cut of the individual book, even if I go to the Amazon site and buy that book and sit

others," said Nicole Vanderbilt at Jupiter Communications LLC in New York. "But for Barnes & Noble, the partners will get a cut of the entire purchase."

Barnes & Noble also will offer affiliates the services of an account executive to help design their sites, and it will give them access to an extranet that contains downloadable graphics and scripts for their sites. Barnes & Noble will give affiliates a cut of up to 7% of sales.

### BIGGER BONUSES

Fighting back, Amazon.com last week sweetened the deal for the 500 most popular sites on the World Wide Web as measured by PC Meter, a Web measurement service run by Media Matrix, Inc. in New York. Amazon.com will offer those 500 Web sites a bonus that is 50% higher than the bonuses offered to its other associates.

The bookstore programs are part of a trend among online

vendors, which are making generous revenue-sharing deals and offering associates extensive marketing help to build greater customer loyalty together than they could build alone.

Among sites that offer affiliate programs are 1-800-FLOWERS, Inc. and Net Contents, Inc.'s Virtual Vineyards.

Online mall organizer Spree.Com Corp. went further last week, when it launched a program designed to bring the network-marketing model of business — practiced by Amway Corp. and Tupperware Corp. — to the Internet.

The Thornton, Pa., company offers sites that send users to the Spree.Com site up to 40% of the gross profit on every purchase that the user ever makes at Spree.Com, said company President and CEO Mike Dever at the Internet Commerce Expo in Los Angeles last week.

"We think we've taken the



best concepts of network marketing and applied them to the Internet," Dever said. Spree.Com will have an online bookstore and flower shops and offer gifts for sale. The site will use a "recommendation engine" from Net Perceptions, Inc. in Minneapolis that recommends purchases to its members based on analysis of the members' past online behavior. It will also offer a service to remind members when to buy birthday or other gifts.

Rob Enderle, an analyst at Giga Information Group in Santa Clara, Calif., said he expects Internet partnerships to become more common as companies that find it difficult to get users' attention online look for access to one another's customers.

Barnes & Noble has signed up more than two dozen affiliates, including ESPN SportsZone from Starwave Corp., Cable News Network, Inc.'s CNN Interactive site; Time, Inc.'s New Media, which publishes the Pathfinder site; and the Lycos, Inc. search engine. Previously, Barnes & Noble had signed the New York Times Electronic Media Co. to sell books online with Barnes & Noble by cross-linking through the Times Book Review.

Amazon.com has had its associates program in place for several months, offering bonuses of 5% to 15% to the owners of Web sites that refer users to buy books from Amazon.com. □



Spree.Com CEO Mike Dever: The company offers to sites that refer customers to it a percentage of the profit if the customers make purchases

crash test

d

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## NEW PRODUCTS

**SOFTQUAD INTERNATIONAL, INC.** has announced HotMetal Pro 4.0, a Hypertext Markup Language (HTML) authoring tool for creating and managing World Wide Web sites.

According to the Toronto company, the new version includes an interactive site-creation environment, called Site Maker,

that lets users build Web sites without having to know anything about HTML or Web page design. Options range from a point-and-click graphical environment for beginners to an environment that offers direct editing of HTML source code.

The tool is available for Windows 95 and Windows NT for \$129.

**SoftQuad International**  
(416) 544-9000  
www.softquad.com

**WALL DATA, INC.** has announced Rumba Office 95/NT for TCP/IP, a suite of 32-bit access applications to connect to host systems using the Internet.

According to the Kirkland, Wash., company, the suite lets 32-bit Windows 95 and NT users access information located on IBM mainframe, midrange and database systems via Microsoft Corp.'s Internet Explorer browser and a TCP/IP network connection. The suite is built as a set of ActiveX objects to assist developers in the creation of custom client/server access applications.

The suite costs \$350 per seat. Current users of the 16-bit suite can upgrade for \$75 per seat.

**Wall Data**  
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COMPUTERWORLD

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**NOX TOP INTERACTIVE** has announced IVisit, videoconferencing software that can connect multiple users in a conference without a central server.

According to the Los Angeles company, IVisit provides 4-bit grayscale video via direct peer-to-peer connectivity over the Internet. Windows 95, NT and Macintosh users need their own camera, a 28.8K bit/sec. modem and a network connection. The software was designed to function independently of World Wide Web browsers but can be configured to launch from a Web page. A participant identification system that uses virtual business cards and password protection options is included.

IVisit costs \$49.95 per user.  
**Nox Top Interactive**  
(310) 235-1300  
www.ivisit.com

**DELTA POINT, INC.** has announced SiteSweeper 2.0, an application for World Wide Web site managers that reports on Web site performance and problems.

According to the Monterey, Calif., company, the software can sweep multiple sites on multiple servers (Unix, OS/2 and Windows NT) in a single session and generate reports on broken links, slow pages caused by large images, missing image definitions, distorted images and missing meta tags. Users can automate SiteSweeper to run during off-peak hours and can view its platform-independent reports in any browser.

SiteSweeper costs \$495 for Windows 3.1, Windows 95 and Windows NT.

**Delta Point**  
(408) 648-4000  
www.deltapoint.com

**AMERICAN SYSTEMS** has announced Internet EZ Search 2.0, Internet search software for Windows 95 and Windows NT.

According to the Fort Worth, Texas, company, the application provides a single window that lets users talk to 49 of the major search engines on the Internet at once. EZ Search allows users to control the number of results returned and eliminates duplicate references to the same World Wide Web site.

Internet EZ Search 2.0 costs \$29.95.  
**American Systems**  
(817) 485-6547  
www.americansys.com

# Bank invests in 'net strategy

CONTINUED FROM PAGE 49

banking market, where ease of use is becoming more and more a distinct competitive issue.

"Quality customer service is basic to everything we do and will be the key way we differentiate ourselves," said David Coulter, CEO of Bank of America, which bought the technology from Concorde Solutions.

Because Concorde Solutions is a subsidiary of Bank of America, the bank has to pay for the technology, which is also available to other banks. Tel Aviv-based Israel Discount Bank has also bought it.

about why our customers are asking certain questions, not about how to answer them."

It is often difficult and time-consuming to find information stored in various databases because the user has to know exactly where to look for it. Most applications let users drill down into one vertical database, but Bank of America wanted to give

customers information from many sources, said Isaac Applbaum, president and CEO of Concorde Solutions.

Applbaum used the industry-standard Common Object Request Broker Architecture as a model for his Data Objects Manager. The Data Objects Manager's function is to receive the information request from a

browser, translate and transmit it to host-based legacy applications, then ship the reply to an object-oriented business application. That Java-based business object creates a dynamic Web page to present the information to users in a Web browser.

## BETTER SERVICE

Westover said about 400 customer service workers use the application, but he said he expects that number to grow. He said the next phase will be offering the capabilities to customers who use the bank's Web site. He

couldn't say when that would happen, however.

The technology should enable banks to better focus on customer service, said George Kivel, group director at The Tower Group in Newton, Mass.

"The big advantage that it offers is in customer retention," Kivel said. "One of the main reasons for customers to change banks is because they move. It's all about physical location. If people can bank easily from their own homes, that removes the physical location factor and increases retention." □

# Java browser links HotJava, HTML

CONTINUED FROM PAGE 49

Netscape announced in June that it intended to release a Java version of its Communicator groupware client, which includes the Navigator browser, sometime next year.

Although some users like the idea of a Java browser, others aren't sure they need one.

John Andrews, president of

CSK Technology in Jacksonville, Fla., said he doesn't care about a Java browser because "a 100% Pure Java application will run under a non-Java browser."

## FDA APPROVES

But the Food and Drug Administration might like an additional browser option given that it

has standardized on the non-Java-based Internet Explorer, a spokesman said.

"If the entire foundation is Java, then you'd have all the security and the safety features built all the way through all those levels," said Martin Jackson, a senior systems engineer who works on applications at

the FDA's National Center for Toxicological Research.

Guy Morozain, executive director of Ontario College Application Service, said he likes the idea of a Java browser because that means Web browsers can run across all platforms immediately upon their release. At present, browser releases tend to stagger on different platforms. Windows 95 and NT releases typically hit the market before the Unix and Macintosh versions. □



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# The Enterprise Network

LANs • WANs • Network Management

## Briefs



Budget's Paul Kasten

"Our customer service has improved because people are more productive"

## Budget drives savings

By Matt Hamblen

PAUL KASTEN has the hard numbers on Budget Rent A Car Corp.'s distance learning program, which uses audioconferencing and PC-based data sharing to train hundreds of customer service representatives.

Budget used to spend about \$2,000 per student on travel and expenses for the two weeks of classroom training. The new distance learning program costs

only \$156 per person, mostly for long-distance telephone charges, said Kasten, director of training and development at Budget, in Lisle, Ill.

During the past 10 months, Budget has trained 400 customer service representatives and nearly 150 others in accounting and human resources using the new method.

It works this way: An instructor in Lisle sits in a room with a conventional analog phone and

voice connections to eight students at separate locations throughout the U.S.

The instructor also has eight PCs rack-mounted on a wall, where he can monitor how each student is filling out a computer-based car rental form. The PCs use analog modems over standard phone lines.

With a total of 16 analog phone lines and a \$15 per line, Budget, page 56

## Funeral provider comes to bury Unix, praise NT

By Laura DiDio  
New Orleans

STEWART ENTERPRISES, INC. is laying Unix to rest.

Stewart, one of the world's largest death care providers — with projected annual revenue of \$600 million — will replace its Unix systems with Microsoft Corp. Windows NT Server and Windows 95 on the desktop.

The migration from Unix will let Stewart's 551 funeral homes and 125 cemeteries worldwide provide faster and more accurate service to its customers, said Kent Alfonso, vice president of information systems at the company, which buries 100,000 people each year.

The old system provided access to customer information, but a limited number of staffers were familiar with Unix. "It's a simple matter to train the users on Windows NT," Alfonso said. "As for the customers, we just show them what's on the screen, let them review the funeral arrangements and check pricing for accuracy, and print out their bills."

The new applications also let users cut and paste information among applications, which wasn't possible with the Unix systems.

In the highly regulated funeral industry, funeral homes must generate and file forms for local, state and federal authorities.



Many funeral home and cemetery administrators generate that information manually, which can increase errors.

"If a name is misspelled on a death certificate, the state will reject it and make us refile,"

said network administrator Greg Ruiz, who will oversee the rollout during the next eight to 12 months. "Meanwhile, the deceased's family can't finalize their paperwork with the necessary funeral provider, page 57

## Work on Token Ring standards boosts interest of large users

By Bob Wallace

ALTHOUGH MAJOR networking vendors back the development of standards for high-speed Token Ring networking, only its largest users may stay with Token Ring for the long haul.

If high-speed Token Ring technology passes muster, it will let users who stay put dodge huge infrastructure changeovers that consume time, re-

sources and money. Those who are moving to switched Ethernet said it has more of a future and is much less expensive than Token Ring.

Along with a coterie of interested vendors, the Institute of Electrical and Electronic Engineers, Inc.'s (IEEE) 802.5 committee started work two weeks ago on a standard that supports 100M bit/sec. Token Ring, which can scale past 1G bit/sec. in speed. Vendors have prom-

ised product demonstrations at Network/Interop '98 in Las Vegas next spring.

Vendors involved include IBM, Cisco Systems, Inc., Bay Networks, Inc., 3Com Corp., Caldtron Systems, Inc., Madge Networks, Inc., Olicom, Inc. and Xylan Corp.

Although they would stand to gain the most in savings, large Token Ring users could spend more replacing their existing in-

frastructure. Token Ring, page 57

### CAN THIS SLIDE BE STOPPED?

Projected worldwide shared Token Ring desktop shipments



Source: Datacube Group, Portland, Maine, Oct.





# The Enterprise Network

LANs • WANs • Network Management

## Briefs

### INS monitoring

International Network Services, Inc. (INS) in Sunnyvale, Calif., has announced new reports and more scalability in Version 4.0 of its Enterprise-Pro network performance monitoring service. New features include the ability to track internal or external service levels. Cost varies by network size.

### Cisco router

Cisco Systems, Inc. in San Jose, Calif., last week announced the worst-kept secret in the networking industry: the Cisco 12000 GSR, a megarouter that helps Internet service provider networks scale upward in bandwidth and speed. The GSR can support speeds of 625M bit/sec. and 2.5G bit/sec., with a 9.6G bit/sec. version listed as a future release. The GSR will ship next month with a base price of \$14,900.

### CA wakes up PCs

Computer Associates International, Inc. in Ithaca, N.Y., has enabled its Uniscenter TNG management suite to turn on networked PCs equipped with the Magic Packet technology from Advanced Micro Devices, Inc. It allows centralized managers to remotely start workstations to scan them for viruses, distribute software or back up files.

### Remote access

Advanced Computer Communications, Inc. in Santa Barbara, Calif., last week launched its second Tigris Integrated Access Platform, a scalable, three-slot remote access concentrator. It provides Internet service providers and businesses with an entry-level point of presence (POP) to transmit information to remote sites. The new device is a three-slot chassis that includes a control card with four primary line interfaces, two 10/100Mbit/sec. Ethernet ports and a 48- or 64-port modem card. The POP bundle with 48 ports and four T1 slots costs \$29,995. The standard chassis costs \$1,395.



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"If a name is misspelled on a death certificate, the state will reject it and make us refile,"

said network administrator Greg Ruiz, who will oversee the rollout during the next eight to 12 months. "Meanwhile, the deceased's family can't finalize their paperwork with the necro-

Funeral provider, page 57

## Work on Token Ring standards boosts interest of large users

By Bob Wallace

ALTHOUGH MAJOR networking vendors back the development of standards for high-speed Token Ring networking, only its largest users may stay with Token Ring for the long haul.

If high-speed Token Ring technology passes muster, it will let users who stay put dodge huge infrastructure changeovers that consume time, re-



Source: Data On Demand, Portland, Maine, Oct.

sources and money. Those who are moving to switched Ethernet said it has more of a future and is much less expensive than Token Ring.

Along with a coterie of interested vendors, the Institute of Electrical and Electronic Engineers, Inc.'s (IEEE) 802.5 committee started work two weeks ago on a standard that supports 100M bit/sec. Token Ring, which can scale past 1G bit/sec. in speed. Vendors have prom-

ised product demonstrations at Network/Interop '98 in Las Vegas next spring.

Vendors involved include IBM, Cisco Systems, Inc., Bay Networks, Inc., 3Com Corp., Calixton Systems Inc., Madgry Networks, Inc., Ollicom, Inc. and Xylan Corp.

Although they would stand to gain the most in savings, large Token Ring users could spend more replacing their existing in-

Token Ring, page 57

# Budget distance-learning training pays off

CONTINUED FROM PAGE 55

month service charge per line, Kasten said Budget also saves over the cost of a T1 line — which many teleconferencing service providers encourage users to install. A T1 line can cost \$1,000 to \$3,000 per month, depending on the vendor. Budget can run three virtual classrooms at once, for a total of 34 students, with a total phone line cost of \$250 per month.

Audiokonferencing are managed by a hardware/software server combination called MeetingPlace from Latitude Communications in Santa Clara, Calif. Prices for MeetingPlace start at \$39,995 for eight audio connections. Students and teachers at Budget share applications with Reach Out software from Sinc, Inc. in San Diego. Pricing starts at \$150. MeetingPlace allows flexibility that is useful for teaching, Budget trainer Vance Kirksey said. Groups of two or three can talk together apart from the rest of the group. "I had done the classroom teaching before, and I was concerned there would be little interaction. But actually, it really is fun," he said.

## BETTER LEARNING

And training takes place at 1,100 rental sites nationwide, where students work privately, out of view of other students. "They get better mastery on the computer because the pressure on them from others is so low," Kirksey said.

The only drawback to audiokonferencing is that when occasional discipline problems develop, "You can't see [students], and there's no walking a student out into the hall and saying, 'Let's get it together,'" Kirksey said. He compensates by scheduling a private call with the student and talking with that person's supervisor, if necessary.

Further advantages, Budget officials said, include the following:

- Students don't need to leave home for two weeks, grappling with family commitments.

- Students master car rental procedures as well or better than before. "Managers at rental locations say the trainees seem

better prepared now than before," Kirksey said.

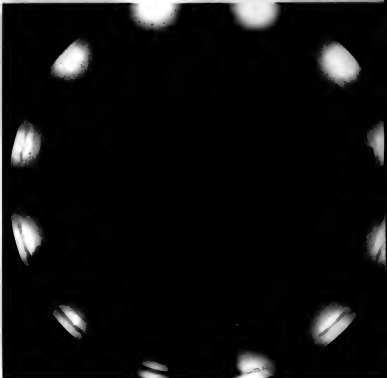
- Training is more standard and consistent, assuring upper management that customers are more likely to get the same treatment at any location. "Our customer

service has improved because people are more productive," Kasten said.

Kasten said alternatives to MeetingPlace are more expensive. Carriers that provide teleconferencing services, including AT&T Corp., Sprint Corp. and MCI Communications Corp., charge 50 cents per minute or more per person, but Budget spends about 8 cents per minute per person for an ordinary long-distance call. □

## SIEMENS

### The first thing we did was put ourselves in



3COM CORP. has announced the OfficeConnect LAN Modem, an Integrated Services Digital Network (ISDN) modem for multisite Internet connectivity at small and home offices.

According to the Santa Clara, Calif. company, the modem incorporates a four-port 10Base-T Ethernet hub with IP routing and built-in World Wide Web browser management. Each attached PC can connect with the single ISDN line that feeds into the modem. All four users can simultaneously access a single Internet site, or any two users can connect to different destinations at the same time.

OfficeConnect LAN Modem costs

\$499-  
3Com  
(408) 764-3000  
www.3com.com

# Funeral provider switches

CONTINUED FROM PAGE 55

ary agencies like Social Security or insurance companies. That's the last thing anyone needs at such a sensitive time."

Stewart's IS team outsourced development of the applications to systems integrator Synon, Inc. in Larkspur, Calif.

Synon handled the migration with its Obydian package, a commercial computer-aided software engineering development tool that automatically generated customized funeral application code compatible with Microsoft's BackOffice

applications such as the SQL Server database.

Synon built two customized applications: the Cemetery and Funeral Home Enabler (CAFE) and the Key Information for Sales (KIS).

CAFE and KIS also let Stewart customers plan the details of their own funerals. About 35% of Stewart's U.S. customers prearrange and pay for their funerals.

For example, a customer can specify all

the arrangements, including the type of coffin and service, complete with prayer cards and hymns, cremation or burial. "All the family has to do is come to us, and we access the CAFE database; we take care of everything," Alfonso said. "And we can give them a copy of all the deceased's instructions so they can be sure we're making the arrangements to the exact specifications."

The applications also generate the myriad forms and provide details on specialized arrangements such as veterans' death benefits and funeral traditions.

"The system lets us do cash advances to outside parties such as florists, so that our customers don't have to pay multiple organizations. We can generate a single bill, which can be much more convenient," Alfonso said.

Jerry Schoen, vice president of operations at Stewart's Lake Lawn Metairie Funeral Home here, said the Windows NT network will provide his 25 employees with better communications among various departments.

"This will let the funeral director know when everything is done so he or she can schedule the services," Schoen said. □

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The Future Is Coming To Us.

## Token Ring

CONTINUED FROM PAGE 55

infrastructure than they would save by using Ethernet.

Projected sales of Token Ring equipment continue to slide (see chart, page 53), but some users are optimistic.

"That sounds good but will give us something to definitely look at for our network, although [the IEEE] work is just under way," said David Pratt, information systems manager at First National Bank of Maryland in Baltimore, which has a 5,000-node Token Ring network. "I still pay more for Token Ring — which makes it tough to perceive value. It would be so hard to migrate away from something that's so heavily extended and widely used," Pratt said. And his user base has no particular complaint about Token Ring, he said.

Barry Forgeng said he sees potential opportunity for high-speed Token Ring if it is priced right. But Forgeng headed for switched Ethernet.

"Unless the vendors can bring down the cost of Token Ring to a few hundred dollars [per desktop] like switched Ethernet, we're not going that route," said Forgeng, infrastructure manager at ELF Autochem North America, Inc., a Philadelphia-based chemical giant with a 1,300-node Token Ring network. "If vendors could do that, I'm sure all Token Ring shops would take a look at this."

Ethernet switches require only an Ethernet card, which most PCs have built-in. Token Ring adapters, which aren't built-in, can cost \$400.

Forgeng put his Vines and Windows NT servers on a Fast Ethernet backbone and will start taking the top 20 users that transmit traffic off the Token Ring LAN and connect them to switched Ethernet ports. □





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# Software

Databases • Development • Operating Systems

## Briefs

Interest in Web tests and workflow surpassed last year's top technology: document management. Image management systems take about nine months and \$1.09M to implement, compared with intranet applications at six months and \$354,000.

Base: 221 Association for Information and Image Management International (AIIM) conference attendees

Source: AIIM, Silver Spring, Md.

### Midrange middleware

IBM next month plans to unveil the latest version of its MQSeries messaging middleware for several Unix server platforms. The middleware, code-named Armada, will support major Unix platforms such as HP-UX, Solaris and AIX. It will add several performance and ease-of-use features. Armada also was designed to reduce the network bandwidth needed to use MQSeries.

### Tetra adds product tool

British software maker Tetra Ltd. has added a product configurator to its flagship Tetra CS/3 software system. The company, with U.S. headquarters in Houston, bought the configurator from Apex, a British company and one of Tetra's development partners. It is for companies that make-to-order complex products. It comes free with the CS/3 package. It is available now.

### Dogs

Microsoft Corp. pulled a service patch for Word 97 from its World Wide Web site recently after it discovered a "rare" bug that could have prevented users from saving edited files, a company spokesman said. To date, only five people have reported problems with it, he said. More than 1 million copies of Office have been sold, and fewer than 1 million people have downloaded the patch. A fix has been written but won't be posted until it is tested, Microsoft officials said.

## Databases handle mix of apps

By Craig Stratan

### MIX IT UP

That's the demand database vendors are getting from IS managers who want to run mixed workloads of transaction processing and decision-support applications on a single database server. In response, more and more databases are being tailored to do just that.

For example, the ability to handle multiple applications is a key feature of databases that IBM and Sybase, Inc. will formally introduce this week. Both

products were designed to let users run multifaceted workloads on one server without causing performance nightmares (see chart at right).

And it's a good thing, too, said several database managers with end users who need to run transactions and analytical queries against the same sets of data.

"We expect a database to support a mixed workload," said David Yeager, a vice president in the distributed architecture group at Merrill Lynch & Co. in Princeton, N.J. Yeager is beta-

testing IBM's DB2 Universal Database on an upcoming application that will archive Merrill Lynch correspondence to demonstrate compliance with government securities regulations.

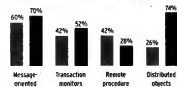
The application primarily involves transaction processing, but end users also will run complex queries against the data. Yeager said DB2 Universal Database's features — such as the ability to back up databases in pages rather than all at once — so far appear to be just what the doctor ordered, he said.

Business analysts at the Databases, page 64

### MIDDLE OF THE PACK

Using all sorts of middleware can present a possible development headache down the road:

What kind of middleware are you deploying? ☒ Now ☐ 1999



Base: 50 IT executives

Source: Forrester Research Inc., Cambridge, Mass.

## Candle illuminates path to write-once middleware

By Tim Ouellette

CANDLE CORP. is trying to shed light into the crevices between middleware technologies.

The benefit of middleware is that it moves data among different applications, but the problem is that users must still write code to the middleware application programming interface (API).

And because users are finding that they can't count on one

middleware tool to do the job, they can face a dizzying array of middleware products and APIs in the enterprise.

### ONE WAY IN

With its new development tool — code named Roma — Santa Monica, Calif.-based Candle hopes to offer users a single way to build middleware hooks in to their enterprise applications.

The goal is to cut application de-

Write-once middleware, page 64

## Beta-testing tool knows what you're doing — and when

► Some worry tool will be used to spy on unsuspecting users

By Randy Weston

BETA TESTERS and others beware. Big Brother is invading your software, but it might not be all bad.

Silicon Valley start-up Aquead Software, Inc. in Menlo Park, Calif., is launching a product designed initially to help software vendors track and record the use of a product during beta testing. The company plans to expand the line to an-

clude products for internal information systems departments to measure the use of software systems such as SAP AG's R/3 to gauge their return on investment.

### HOW IT WORKS

The Aquead product is attached to another software program and runs either at the server or the client, depending on the software to which it is attached. It then sends back to the vendor, via electronic mail, information on who used the software, what they used it for and how long they used it.

The information is automati-

cally compiled in databases for analysis.

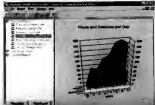
Aquead officials said the product could be used to analyze software bugs or to uncover unexpected uses for tested applications.

Susan Aldrich, an analyst at Boston-based Patricia Seybold

Group, said she could see value to Aquead's technology at the help desk level, especially in diagnosing end-user system failures. But Aldrich said she is concerned that a product with such observatory powers could be misused to spy on a company.

Beta-testing tool, page 64

Aquead software reveals which beta testers used software, how long they used it and what they used it for



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# Charles Wang puts CA on object track

With the shipment of its Jasmine product, planned for later this year, Computer Associates International, Inc. will try to do what no one else has done, make lots of money with an object database. CEO Charles Wang earlier this month spoke with Computerworld Editor Paul Gilin at CA headquarters in Ithaca, N.Y.

**CW:** You've been quiet on the acquisitions front since the Cheyenne buyout last year. Is that by design?

**WANG:** We've done quite a few [small] acquisitions. We just acquired a 30-person artificial intelligence company specializ-

ing in neural networks, because we'll build that technology in to Unicenter to define policies based on network activity. [Acquisition work] will continue.

**CW:** A lot of people have been waiting for you to pick up Sybase or Informix. You bought so many database companies for so long. Why have you stayed away from them?

**WANG:** I think that their fundamental strategy is flawed. When we're headed in database [with Jasmine] it's pure objects instead of some kind of hybrid.

**CW:** Have Informix's problems

selling object databases caused you to reconsider your object strategy?

**WANG:** Informix was a hybrid solution, and I don't think the relational model can be the underpinning of an object solution. We don't see any other way to go than with objects.

**CW:** Most object companies haven't had any success, though.

**WANG:** We have enough [out in the industry to push this concept] so people adopt it. I think everybody recognizes the need to build with objects. Unfortunately, there aren't enough pieces built yet. If we can attract

enough attention, then there will be enough objects that people can build their applications much faster.

**CW:** How fast will this market grow?

**WANG:** In five to 10 years, Jasmine should be bigger than Unicenter. And Unicenter today is [worth] \$1.4 billion. Unicenter will eventually be class libraries on Jasmine.

**CW:** Tivoli claims you have the midrange of the market and that it has the high end.

**WANG:** I don't think they have the high end, because I don't believe their product is as scalable as ours. Plus, there is a fundamental difference: Tivoli is a framework. Unicenter is a framework and all the applications that you need to manage your systems and network. It's like comparing apples and oranges.

**CW:** Have you given up on the PC business?

**WANG:** The whole Cheyenne acquisition was built around what they did in the PC world. We're the No. 1 PC accounting software vendor with Accpac. But in terms of spreadsheets and word processors, we're not in that marketplace.

**CW:** A lot of people are saying that CA is an easier company to

"We made a lot of mistakes in the past; we learned from them"

deal with these days. Is that an intentional change?

**WANG:** That assumes that we had black hats on in the past. We made a lot of mistakes in the past; we learned from them. Media people recognize after a while that we've done some great things for the industry with technology, and we've been here at 20 years. Not many people can say that. □



## Write-once middleware

CONTINUED FROM PAGE A1

velopment costs. Right now some users have bought or developed several different middleware tools.

"We have a hodgepodge of everything," said Gary Ward, a senior systems engineer at Bellcore in Morristown, N.J., who is a major user of IBM's MQ-Series. "You are supposed to fit systems to work together, but it is not an easy thing."

Roma will let users write to one type of API for all their middleware needs instead of learning each individual product's API. Those include transaction monitors, message-oriented middleware, object request brokers and database access tools—all moving data across different systems and applications (see chart, page 6).

"A lot of people have tried to build their own APIs to do this," said John Mann, an analyst at The Yankee Group in Boston. "The nice thing is, people could

jump on [Roma] and make it a standard quickly."

The result: Users could cut back on their development costs by quickly writing code for all their middleware applications. Cutting development costs is a standard goal of middleware technology.

For example, the Philadelphia Stock Exchange used Talaran Corp.'s SmartObjects to speed communications among systems on its options floor.

"We used to develop all this ourselves. Now SmartObjects decreases our development time," said Thomas Witman, vice president of trading systems.

He said Roma was interesting, but he wondered how quickly users would need it, because many are still in the early stages of their middleware projects.

Analysts agreed. "It is still a little early to know

all the features someone might want in terms of messaging," Mann said.

Some vendors are building bridges between middleware applications.

For example, Level8 Systems, Inc. in New York is building a link between MQSeries and Microsoft Corp.'s MSMQ.

And others said taking a whole approach to middleware will solve the problem better.

### DISTRIBUTED SYSTEM

"What we need is a platform to provide all middleware services," said Ted Shadler, an analyst at Forrester Research, Inc. in Cambridge, Mass. "If we put all these services on the back end, you can get a distributed operating system."

Candle, with a major systems management business, has been developing several products to support the administration and management of MQSeries.

Beta testing for Roma will begin later this year; delivery is expected next year. □

## Databases run mix of apps

CONTINUED FROM PAGE A1

Healthcare Services division at pharmaceuticals maker SmithKline Beecham Corp. run ad hoc queries against a Sybase database that was tuned mainly for processing patient information entered by nurses.

Information systems staffers "certainly have to understand what it is [the business analysts] might go after" to prevent runaway queries that could hog the server and block transactions, said Rob Swift, manager of database administration at the Healthcare Services unit in Philadelphia.

Swift said that process might be eased by Sybase's new Adaptive Server Enterprise 11.5 database, which will let different applications be tied to separate CPUs so they don't have to fight for resources.

SmithKline Beecham expects to upgrade to the new release in the next few months. Swift noted.

IBM and Emeryville, Calif.-based Sybase both plan to ship

their new databases this month [CW, Sept. 8]. The two companies are trying to grab back some of the database spotlight from Oracle Corp.'s Oracle8i software, which was released in June with mixed workload features such as partitioning and transaction queuing.

Informix Software, Inc. plans to get in the act later this year by adding transaction support to its analysis-oriented OnLine XPFS parallel database.

Even intensive query-only applications might benefit from mixed-workload features, said Sybase beta-tester Justin Tozer. Tozer is a staff engineer at an Idaho Falls, Idaho, environmental engineering lab that Lockheed Martin Corp. runs for the federal government.

"We have thousands of engineers here, and they can dream up some incredible things to do to a server," Tozer said. "If you're not careful, you can have your system brought down to its knees." □

## Beta-testing tool watches all

CONTINUED FROM PAGE A1

tor or to hack in to a company by attaching it unsuspiciously to shareware.

"It is something people should feel some concern about, but I hope if someone is downloading something off the [World Wide] Web to try out, they should know that that entails and the risks," Aldrich said.

Jim McGregor, Aquead's vice president of engineering, said his company's licensing agreements require users of the

product to warn their customers Aquead is attached.

"This is a very powerful tool," McGregor said. "There could be a dark side to this stuff, but our intent is to reduce that as much as possible."

### PREFIX PREVIEW

At Intrinsa Corp. in Mountain View, Calif., officials said Aquead helped them figure out just how Prefix, a new tool designed to simulate the actions of software components, would be

used by application developers.

"We could hypothesize how people would use it, but we couldn't know for sure," said Jon Pincus, chief technology officer at Intrinsa. "The information we got from Aquead shows not only how people think they will use it, but how they actually are [using it]. There is no other way to get this information without sending someone on-site to watch what they are doing."

Of the 13 sites and 100 users now using Prefix, only a few have asked to deactivate the Aquead probe for security reasons. Pincus said. □

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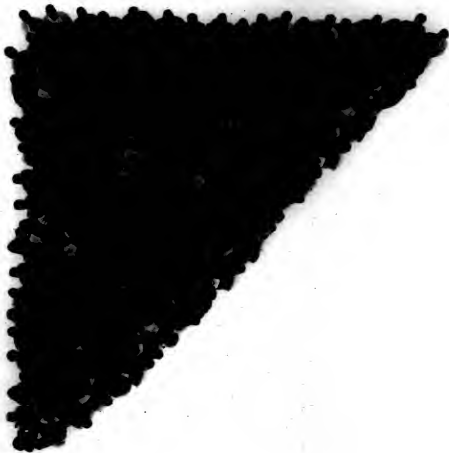
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## Servers &amp; PCs

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## Briefs

## Notebooks getting charged-up chips

## ► Intel processor to put laptops near PC level

By Kim Girard and Wylie Wong

INTEL CORP. last week introduced its speedy Tillamook processor, a chip that will push laptops to run faster with less power consumption.

At least a half-dozen laptop makers plan to roll out new portables this month using Tillamook. Intel's new generation of 200- and 233-MHz Pentium processors with MMX multimedia technology.

## SQUEAK UP TO 266 MHz

A 266-MHz processor is due by year's end, analysts say.

Tillamook will nudge portables' performance closer to that

of desktop PCs, analysts said. "The portable is always competing with the desktop," said Randal Giusto, an analyst at International Data Corp. in Framingham, Mass. "[Tillamook] just means the portable catches up to the desktop."

Portables won't be equipped with Intel's Pentium II processor for mobile computers — code-named Deschutes — until next year.

Some vendors, including Fujitsu PC Corp. in Milpitas, Calif., are dropping the Tillamook chip into existing midrange laptop product lines.

Others, including Hewlett-Packard Co., IBM PC Co. and Dell Computer Corp., are manu-

facturing completely new machines sporting the chip.

Mike Radigan, a technology manager at Xerox Corp. in Rochester, N.Y., which uses about 20,000 laptops in the

Radigan said. He said he has had problems with some Compaq laptop screens and short battery life.

Radigan said he was impressed with the new Compaq Armada's built-in modem, speaker sound quality, price and design.

Compaq will use the Tillamook first in its consumer Presario line, was among the companies that showcased

new portables at Intel's announcement. Others included the following:

Toshiba America Information Systems, Inc. in Irvine, Calif., unveiled a 233-MHz, 8-b. Tecra with a 13.3-in. screen and op-

Notebooks, page 12

Intel's new Tillamook processor

- ▲ Speed: 200 MHz and 233 MHz
- ▲ Price: \$3,300 to \$4,000\*
- \*Prices starting price of a laptop with a Tillamook chip

## Growing hard drives pose backup problem for IS

By April Jacobs

BIGGER HARD DRIVES may be causing larger headaches for information systems managers who say users are storing precious corporate data that doesn't always get backed up when it isn't on the network.

But systems managers are often cornered into buying 4G- and even 4G-byte drives on PCs because newer application suites take up bigger chunks of space. And, they say, remote users need to store data locally to get their work done while they are on the road.

## STORING DATA

"Our situation is typical of a corporate setting. I think, in that we discourage users from storing data locally, because it's not easy to back up, and the users themselves don't remember to do it on their own," said David Blakey, computer systems manager at Genencor International, Inc., a biotechnology company in Palo Alto, Calif.

"But remote users are differ-

ent. They need to store data locally while they're on the road.

We make sure it's encrypted, and we back it up when they log on to the network," Blakey said.

He said Genencor also invests in high-end equipment such as RAID drives on servers and high-speed network backbones so users won't have to store data

on their desktops to retrieve it quickly.

Analysts said users need larger drives to accommodate applications that leave a bigger storage footprint, such as Microsoft Corp.'s Office and Lotus Development Corp.'s Notes, along with custom applications. Office 97, for example, takes up 140M bytes of disk space on average.

The problem has reached wartime proportions, the analysts said. The two main parties at war are end users, who want

speedy access to their data — at home and at work — and

Growing hard drives, page 14

CLOSER LOOK  
Desktop storage

## SECURITY STEPS

Security precautions for users who store data locally:

- Install Remote Monitoring software to check available capacity of the hard drive for excessive usage
- For remote users, be sure applications that allow access to data are password-protected
- Teach users to store data on the network drives as well as their hard drives to prevent loss of files
- Install software that performs scheduled backups of hard drives

## Disk drive capacity to double

By Nancy Dillon

► HIGH-END 3.5-inch server disk drives used for data-intensive applications such as online transaction processing, data warehousing and data mining are set to double in capacity at the start of next year.

Analysts said manufacturers will introduce 9G- and 18G-byte 3.5-inch drives to eventually replace their current 4.5G- and 9G-byte models.

EVERYONE'S DOING IT: Micropolis, Inc. in Chatsworth, Calif., last week announced its double-capacity drives, along with a more novel 20G-byte 3.5-inch drive for professional multimedia applications.

"It's safe to assume that all of the big server drive companies will announce 9G- and 18G-byte drives by the end of this year or early '98," said Jim Porter, president of Disk/Dread, Inc. in Mountain View, Calif. Porter said the drive manufacturers,

Hard-ware, page 16

## BIG TIME

The market for technical high-performance computers, defined as supercomputers, high-performance midrange computers and massively parallel computers:

## Revenue



## Units shipped



Source: International Data Corp., Framingham, Mass.



## Servers &amp; PCs

Large Systems • Workstations • Portable Computing

## Briefs

## Santa Fe rides EMC

Burlington Northern and Santa Fe Railway Co. in Fort Worth, Texas, has bought 27 bytes of disk array storage from EMC Corp. in Hopkinton, Mass., along with a license for EMC's Symmetrix Data Migration Services software. The software let Santa Fe move 27 bytes of data off its old disk arrays to EMC disks, while related applications remained online and available. Company officials estimated the move to EMC, which took to hours, also cut its batch cycle from five hours to 30 minutes. That gives users more time to work on mission-critical data and applications without waiting for back-end processing.

## Midrange service

DecisionOne Corp. in Proser, Pa., is offering a service called MidrangeX to help firms use midrange platforms for electronic commerce applications. Offerings include hardware installation and maintenance; consulting; disaster recovery; operating system support and remote systems management. Platforms covered include IBM's RS/6000 and AS/400 and Hewlett-Packard Co.'s Digital Equipment Corp. and Sun Microsystems, Inc. midrange systems.

## BIG TIME

The market for technical high-performance computers, defined as supercomputers, high-performance midrange computers and massively parallel computers:



Source: International Data Corp., Framingham, Mass.

## Notebooks getting charged-up chips

## ► Intel processor to put laptops near PC level

By Kim Girard and Wylie Wong

INTEL CORP. last week introduced its speedy Tillamook processor, a chip that will push laptops to run faster with less power consumption.

At least a half-dozen laptop makers plan to roll out new portables this month using Tillamook. Intel's new generation of 200- and 233-MHz Pentium processors with MMX multimedia technology.

## GOING UP TO 266 MHz

A 266-MHz processor is due by year's end, analysts said. Tillamook will nudge portables' performance closer to that

of desktop PCs, analysts said. "The portable is always competing with the desktop," said Randal Giusto, an analyst at International Data Corp. in Framingham, Mass. "Tillamook just means the portable catches up to the desktop."

Portables won't be equipped with Intel's Pentium II processor for mobile computers — code-named Deschutes — until next year.

Some vendors, including Fujitsu PC Corp. in Milpitas, Calif., are dropping the Tillamook chip onto existing midrange laptop product lines.

Others, including Hewlett-Packard Co., IBM PC Co. and Dell Computer Corp., are manu-

facturing completely new machines sporting the chip.

Mike Radigan, a technology manager at Xerox Corp. in Rochester, N.Y., which uses about 20,000 laptops in the

## Intel's new Tillamook processor

■ Speed: 200 MHz and 233 MHz

■ Price: \$3,500 to \$4,000\*

\*Average starting price of a laptop with a Tillamook chip

U.S., said his company plans to buy Tillamook-equipped laptops from Compaq Computer Corp. next year.

"The Tillamook really looks like the right product for the time frame, and we just hope the reliability issues go away,"

Radigan said. He said he has had problems with some Compaq laptop screens and short battery life.

Radigan said he was impressed with the new Compaq Armada's built-in modem, speaker sound quality, price and design.

Compaq in Houston, which will use the Tillamook first in its consumer Presario line, was among the companies that showcased new portables at Intel's announcement. Others included the following:

■ Toshiba America Information Systems, Inc. in Irvine, Calif., unveiled a 233-MHz, 8-lb. Tecra with a 13.1-in. screen and optional Notebook, page 12

## Growing hard drives pose backup problem for IS

By April Jacobs

BIGGER HARD drives may be causing larger headaches for information systems managers who say users are storing precious corporate data that doesn't always get backed up when it isn't on the network.

But systems managers are often concerned into buying 4G- and even 4G-byte drives on PCs because newer application suites take up bigger chunks of space. And, they say, remote users need to store data locally to get their work done while they are on the road.

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ent. They need to store data locally while they're on the road. We make sure it's encrypted, and we back it up when they log on to the network," Blakely said.

He said Genetec also invests in high-end equipment such as RAID drives on servers and high-speed network backbones so users won't have to store data

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CLOSER LOOK  
Desktop storage

The problem has reached wider proportions, the analysts said. The two main parties at war are end users, who want speedy access to their data — at home and at work — and IS. *Growing hard drives, page 74*

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High-end, page 76



pentium



# Notebooks getting charged-up chips

CONTINUED FROM PAGE 65

tional digital video disc-ROM drive and standard digital video camera. The machine ships this month.

■IBM in Somers, N.Y., rolled out three ThinkPad 770 machines, including a low-end 7.4-lb. model that uses the 200-

MHz processor and costs less than \$5,000. The higher-end machine is a multimedia package with a 14.1-in. screen, 5.1-G-byte hard drive and a 233-MHz processor. It costs about \$7,000.

■Dell in Round Rock, Texas, showed off

its new Inspiron line, which targets small to midsize businesses. The computers have 13.3-in. screens, up to 4-G bytes of hard drive storage and 32-M bytes of RAM.

■Gateway 2000, Inc. in North Sioux

City, S.D., released its Solo notebooks, which feature the 400- and 233-MHz processors. The notebooks range from \$2,799 to \$5,799 and have 12.1- to 13.3-in. screens, between 32-M and 64-M bytes of RAM and 3-G- to 5-G-byte hard drives. They are shipping now.

■NEC Corp. introduced two portables: the Versa 6220 and 6230. The 6220 has a 200-MHz processor, 32-M bytes of

**Analysts said Intel's new Tillamook chip will nudge portables' performance closer to that of desktop PCs.**

RAM and a 2.1-G-byte hard drive. It costs \$4,299. The 6230 has a 233-MHz processor, a 5-G-byte hard drive and 64-M bytes of RAM. It costs \$5,799.

■Power Computing Corp. in Round Rock, Texas, also rolled out its first notebook computers, called the PowerTrip line. They are priced between \$3,299 and \$4,999. The portables feature a 12.1- to 13.3-in. screen, a 2.0-G- or 4-G-byte hard drive and 16-M bytes of RAM. They should ship within two weeks.

The new chips will spark price cuts from notebook makers on their current laptops, Giusto said. NEC last week cut prices on its entire Versa line by up to 14%.

For example, the NEC Versa 6050MMX, with a 150-MHz processor, 16-M bytes of RAM and a 2.1-G-byte hard drive, dropped from \$4,199 to \$3,599.

In addition, Compaq and HP cut prices several weeks ago, with Compaq's Armada laptop prices falling by 16%, Giusto said.

He said the first quarter of next year will be good for notebook buyers "when there's more availability of Tillamook designs." □

# OUR NEW YOUR SC THREE T DAY

Listen, when it comes to seeking, finding and delivering the latest-breaking IT news, no one holds a candle to our painstakingly diligent writers and editors. Be that as it may, the esteemed and hallowed pages you hold in your hand, are in fact, weekly pages.

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And we know a lot of you IT leaders don't want to wait that long. (Hell, a lot of you order drip coffee 'cause you don't want to wait for a latte.)

You want today's IT headlines, well, today



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COMPUTERWORLD

## HP laptop due in '98

At first, a prototype of Hewlett-Packard's new laptop looks like a small toy that would fit snugly under the arm.

But the ultrathin portable — a 3.7-lb., 1.25-in.-thick machine — will do its own heavy lifting using Intel's new Tillamook processor, 32-M bytes of RAM and a 1-G-byte hard drive.

HP is among a handful of vendors designing completely new notebooks using Intel's new processor, which also, sources said, would bring portables into performance contention with desktop PCs.

The portable, developed by HP and Mitsubishi Corp. in Japan, was on display during Intel's introduction last week of the Tillamook processor. It sports a magnesium case and a 12.1-in. screen. It requires a lithium polymer battery.

The notebook will be marketed under the Omnibook line and won't be available until early next year, officials said. — Elm Girard



# Growing hard drives pose problem for IS

CONTINUED FROM PAGE 49

managers, who are expected to protect the company's data.

"The arguments are good on both sides, but from the administrative side, there is an ever-increasing gap in this problem of gaining control and manag-

ing data," said Mike Peterson, an analyst at Strategic Resources Group, Inc. in Santa Barbara, Calif.

Chris Kruse, president of Document Repository, Inc. in San Francisco, said end users at his company mostly use disk

space to store documents temporarily, but special precautions help prevent disasters in the form of lost files.

"There are people who need drive space for temporary storage, and that is driving a lot of the requirements that are

out there," Kruse said.

Also, he said, most users require more than 1G byte of hard drive space just to run their applications.

"We look at our standard desktop running applications like Visual Basic, custom software, Access and Fox Pro, and once you load it up, that's what's driving it all," Kruse said.

He noted that application development programs such as Visual Basic have a large footprint.

"But we've always told everyone that anything worth saving should be backed up, so we've changed all the defaults so the home directory is on the network server. Monthly, we get a status report on how full people's drive space is to make sure there isn't a big increase," Kruse said.

## TELETYPE SIONS

Analysts said users should install Remote Monitoring software that lets them check a hard drive for fluctuations or unusual growth, because those are signs that a desktop is being used as a local storage device.

And if remote users need to store data locally, be sure that applications allowing access to data are password-protected and that data replication can be accomplished when a user plugs in to the network. The first precaution will prevent unauthorized users from accessing data, and the second will ensure that data is backed up should a desktop be lost or files damaged.

Network managers also should be sure to educate users on the need to store data on the network drives as well as their hard drives to prevent loss of files. And software that allows for scheduled backups of hard drives should be installed, because users often forget.

Anders Lofgren, an analyst at Giga Information Group in Cambridge, Mass., said several companies offer software that can provide excellent monitoring and backup services. They include Louisville, Colo.-based Storage Technology Corp.'s Reti suite, which provides automated backup services, and Dallas-based Sterling Software, Inc.'s monitoring software for remote users. □

## 3-TO-6 PM HAS BECOME A FRIGHTENING TIME FOR CITY PARENTS.



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# TIME TO BEAT THE STREET.



NATIONAL URBAN LEAGUE

## SHORT

### DEC announces chips

Digital Equipment Corp. last week announced the SA-1100 microprocessor — the newest member of its StrongArm family of chips for the handheld PC, subnotebook and wallet PC markets. The 133- and 200-MHz low-power chips consume less than 150 milliwatts of power. Both versions feature an integrated memory controller, a display controller that supports monochrome and color displays and support for up to six serial interfaces. The microprocessor costs \$39 for the 200-MHz version or \$49 for the 133-MHz version, in quantities of 10,000.





**How long have you been waiting  
for a faster PC Workstation?**

## High-end server disk drives

CONTINUED FROM PAGE 28

which are vying to supply storage system makers such as EMC Corp. and Digital Equipment Corp., generally match one another in offerings.

"As far as I know, Micropolis is the only vendor with a 20G-byte drive in this size," Porter said. "The 20G-byte drive

will not compete with the mainstream [drives] for this reason, but it places Micropolis in somewhat of a technology leadership position."

Users such as Steve Weisser, executive producer at Compass Rose Media, a Santa Cruz, Calif.-based film and video

production company, are the target of specialty products such as the 20G-byte drive. His company has a mixture of 4.3G- and 9G-byte drives on a 150G-byte network, and he said he hopes to get the 20G-byte drives soon.

"With 20G-byte drives, we could keep more data online and access it easier," Weisser said. "And the cost per megabyte would come down with a 20G-byte drive, because we are buying one drive for the

space" rather than four smaller-size disk drives.

Porter estimates that during the life of these 9G-, 18G- and 20G-byte drives, the cost per megabyte will decrease by about one-third of today's cost.

That price savings results from vendor competition and more efficient drive design, Porter said. Newer models store more data in less space using fewer moving parts.

Porter said 3.5-inch drives with 9G- and 18G-byte capacity are expected early next year from Seagate Technology, Inc. in Scotts Valley, Calif.; IBM; Western Digital Corp. in Irvine, Calif.; Fujitsu Computer Products of America, Inc. in San Jose, Calif.; and Hitachi America Ltd. in Bristol, Conn.

Quantum Corp. in Milpitas, Calif., and Micropolis already announced their 9G- and 18G-byte drives, which will be available in January. Quantum's Atlas III series 9G-byte drive will cost \$1,095, and the 18G-byte drive will cost \$1,995. Pricing for Micropolis' Tomahawk series 9G- and 18G-byte drives will be \$1,045 and \$1,945, respectively. The 20G-byte Tomahawk drive will cost \$2,245. □

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The AIM Hot Iron Awards are based on tests conducted by AIM Technology using AIM's Server and Workstation benchmarks. These benchmarks feature AIM's proprietary Load/Mix Modeling technology to accurately and reliably model virtually any end-user application environment. AIM Benchmarks provide consumers with detailed results on system performance, capacity and total throughput across multiple architectures.

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## NEW PRODUCTS

**PANASONIC PERSONAL COMPUTER CO.** has announced the CF-63, a notebook computer with an integrated digital video disc (DVD) ROM drive and a Pentium® 166-MHz processor.

According to the Secaucus, N.J., company, the notebook's DVD-ROM drive supports MPEG-1 playback and also functions as a 20-speed CD-ROM player.

The notebook was designed for mobile users of multimedia presentations because DVD-ROM discs hold 4.7G-bytes of data – or the equivalent of seven conventional CD-ROM discs.

CF-63 costs \$5,999.  
Panasonic Personal Computer  
(800) 666-3537  
[www.panasonic.com](http://www.panasonic.com)

**AXONIX CORP.** has announced JazzShare, hardware that enables access to networked Jaz removable storage devices from Remora Corp., independent of file servers.

According to the Salt Lake City company, JazzShare supports TCP/IP and IPX network protocols and includes a proprietary ProLmQ module that eliminates the need for NetWare Loadable Modules or other network interface software.

The appliance is available in three stand-alone storage models for one, four or seven drive configurations in Ethernet, Fast Ethernet or Token Ring networks.

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Janet Weisman,  
Senior Vice President  
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Transactions in the Age of the Computer

# Data Warehousing

Special Section: Data Mining • Decision Support • Strategies

## Briefs

### TO THE DATA WAREHOUSE WE GO

Worldwide license revenue for data extraction and transformation tools

1996	\$93M
1997	\$148.6M*
1998	\$227.6M*
1999	\$335.2M*

\*Projected

Source: Strategy Analytics, Inc. July 1997

## Beitler sees the data side of Sears

By Leslie Goff

Just three years ago, Sears, Roebuck and Co.'s finance department built a data warehouse — which the retailer, apropos to its business, calls a data mall — with modules for budgeting, store forecasting and strategic, payroll, expense, head count and capital planning.

That system, dubbed the Enterprise Planning and Information Center (EPIC), paid for itself in about a year by enabling Sears to control expenses better and budget more accurately, said Steve Beitler, assistant-controller. Now, Sears is scrapping EPIC to make way for a bigger, better system: Decision 2000, an integrated data warehouse and PeopleSoft, Inc. Financials implementation that will extend the department's analysis and reporting capabilities even further.

Beitler, who in 1994 spearheaded the implementation of the EPIC system, is taking the same role in Decision 2000, which will

leverage the expertise, and in some cases the actual modules, developed for EPIC. He spoke with Computerworld about the upgrade.

**CW: What will the upgraded data warehouse offer that it couldn't before?**

**BEITLER:** EPIC is not a transaction system. It exists on top of our existing transaction system, but we are prevented by the limitations of our legacy systems from doing some of the things we want to do. PeopleSoft has this great transaction environment with an analysis and reporting environment built in to it. [Decision 2000] will eliminate all the limitations and really take advantage of the analytical and reporting activities with the combination of PeopleSoft and data warehousing.

For example, our ability to take a better view of a store or a region will progress dramatically. We had an experimental store

**Sears' Steve Beitler: "You never realize how bad things have been until they are in a state of being relatively OK."**

forecasting module in EPIC... but we were finding that 90% of the data we needed in the data warehouse was accounting data.

So if we wanted to look at store performance, we had to get the data from our accounting system.

Beitler, page B1

## Achieving unity of data

SHAKU ATRI

**W**HEN DATA MARTS stand alone, they may solve one immediate problem: how to deliver better information to end users faster. But they do little to unify data across the organization. For many companies, though, unity should be a primary driver behind any data warehouse initiative. Why miss this opportunity?

The desire to reconcile disparate operational systems and share data across applications has been a major goal of companies for decades. But with data warehouses, many companies

have been unable or unwilling to tackle enterprise modeling and top-down design. They have avoided the tough issues of reconciling data for an enterprise data warehouse by building stand-alone data marts, often as demonstration projects. But because stand-alone data marts breed fragmentation, the pendulum is swinging back from a pure data mart strategy to data warehousing schemes in which data marts are fed from a strong central component.

As the heir to the confusion

Atri, page B1

## Pitney Bowes cashes in on low-cost warehouse

► \$1.5 million database results in new revenue

By Neal Weinberg

With a Pitney Bowes, Inc. need for quick access to customer profiles that spanned its fiercely independent business units, the company's advanced technology group stepped up to the plate.

On a budget that department head Leon Schwartz described as "not even a shoelace," his team cobbled together a trial database in 1993 that grew incrementally into what is now 20GB bytes of compressed data in a Sybase, Inc. database.

The database contains select marketing information about a million U.S. customers who buy or lease the Stamford, Conn.

based company's equipment or who hire it to manage their mailroom, fax network or messaging infrastructure.

Pitney Bowes executives use the data to negotiate larger and more favorable contracts with customers; the company is well on its way to cashing in on \$34 million in cross-selling opportunities. Also, a product migration analysis application is helping one division bring in \$6 million in new revenue per year from existing customers. Profiles of top customers are being used by a leasing unit to reap an additional \$10 million by the end of next year.

But the road traveled by the team has had its twists and turns. And the team still is scratching only the surface of

Pitney Bowes, page B1



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\*Projected

Source: Strategis, San Jose, Calif.

### Red Brick buys tools

Decision-support database vendor Red Brick Systems, Inc. has signed a deal to buy a pair of data warehousing tools from Engage Technologies, Inc. for \$12 million. Officials at Red Brick in Los Gatos, Calif., said Engage/Fusion and Engage/Discover will be tied to its name-brand database in the first half of next year. Engage, a subsidiary of CMG Information Services, Inc. in Andover, Mass., built the products to track and analyze World Wide Web traffic. But Red Brick also plans to target them at applications in retail, health care and other vertical markets.

### NCR/Brio deal

NCR Corp. in Dayton, Ohio, recently signed a deal to include online analytical processing products from Brio Technology, Inc. in NCR's Teradata relational database data warehouse engine. Terms of the deal weren't disclosed. Officials at Brio Technology in Palo Alto, Calif., said products that were part of the deal included BrioQuery, a desktop query tool, and Brio Insight, a Web-based analysis tool.

### GroupWise data access

Information Builders, Inc. is scheduled this week to announce the release of Focus Six, managed reporter edition, for users of Novell, Inc.'s GroupWise 5.1. Officials at New York-based Information Builders said the product offers workgroups the ability to access any database. It is available for \$395 per user copy.

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For example, our ability to take a better view of a store or a region will progress dramatically. We had an experimental store



Sears' Steve Beitler: "You never realize how bad things have been until they are in a state of being relatively OK."

forecasting module in EPIC... but we were finding that 90% of the data we needed in the data warehouse was accounting data.

So if we wanted to look at store performance, we had to get the data from our accounting system.

Beitler, page B1

## COMMENTARY

### Achieving unity of data

SHAKU ATRÉ

**W**HEN DATA MARS stand alone, they may solve one immediate problem: how to deliver better information to end users faster. But they do little to unify data across the organization. For many companies, though, unity should be a primary driver behind any data warehouse initiative. Why muss this opportunity?

The desire to reconcile disparate operational systems and share data across applications has been a major goal of companies for decades. But with data warehouses, many companies

have been unable or unwilling to tackle enterprise modeling and top-down design. They have avoided the tough issues of reconciling data for an enterprise data warehouse by building stand-alone data marts, often as demonstration projects. But because stand-alone data marts are fragmented, the pendulum is swinging back from a pure data mart strategy to data warehousing schemes in which data marts are fed from a strong central component.



As the heir to the confusion

Atré, page B1

## Pitney Bowes cashes in on low-cost warehouse

► \$1.5 million database results in new revenue

By Neal Weinberg

WHEN Pitney Bowes, Inc. needed quick access to customer profiles that spanned its fiercely independent business units, the company's advanced technology group stepped up to the plate.

On a budget that department head Leon Schwartz described as "not even a shoebox," his team cobbled together a trial database in 1993 that grew incrementally into what is now 200 GB of compressed data in a Sybase, Inc. database.

The database contains select marketing information about a million U.S. customers who buy or lease the Stamford, Conn.

based company's equipment or who hire it to manage their mailroom, fax network, or messaging infrastructure.

Pitney Bowes executives use the data to negotiate larger and more favorable contracts with customers; the company is well on its way to cashing in on \$13 million in cross-selling opportunities. Also, a product migration analysis application is helping one division bring in \$6 million in new revenue per year from existing customers. Profiles of top customers are being used by a leasing unit to reap an additional \$10 million by the end of next year.

But the road traveled by the team has had its twists and turns. And the team still is scratching only the surface of

Pitney Bowes, page B1

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# Beitler

CONTINUED FROM PAGE 29

tems. Now we will have an integrated approach, with a high level of integrity, to providing data for our analytical and reporting processes.

**CW: What else will the integration of PeopleSoft and the data warehouse provide?**

**BEITLER:** Integration has tremendous implications. It's a hard thing to qualify. But my gut and the work we are doing tell me there's an advantage because we will only be posting data one time. And then whenever we are doing, there will be one continuous flow of correct data. We won't have to worry about errors and reconciling.

**CW: What drove the decision to upgrade EPIC?**

**BEITLER:** Year 2000 compliance was one factor, although not so much for the data warehouse piece as for the transaction piece. The data warehouse was already year 2000-compliant. We wanted to provide additional analytical capabilities in EPIC, and as we confronted these issues, we began to wonder whether it was worthwhile to make them available in EPIC or come up with a new, integrated solution.

I think EPIC itself demonstrated the need for a solution like this because it created a relative deprivation situation—the theory that you never realize how bad things have been until they are in a state of being relatively OK. It took a system like EPIC to make everyone to see the potential that [a data warehouse] holds for better business decisions and performance.

**CW: You used Informix Corp. as the database platform for EPIC. Given that company's reported problems, what are your plans for the underlying database in Decision 2000?**

**BEITLER:** We will continue to use Informix. Obviously, we want our suppliers to remain viable. We think they'll be OK and that they have one of the best technologies on the market.

Informix is the standard relational database management system in Sears, and across the company we have made very few exceptions to that. This is the largest project we have ever engaged in, and it's highly appropriate to use the Sears standard. We need maximum supportability and integration, so it

wouldn't make sense to select another database as long as [Informix] can do what we ask. We wouldn't be looking to qualify it but to disqualify it, and we have no reason to disqualify it.

**CW: Do you have any plans to put a browser-based front end on the data warehouse or to make the information available to suppliers via an extranet?**

**BEITLER:** It's highly possible that we will do some sort of browser capability. We view that approach as having great potential for communicating with our stores and other remote units.

An extranet falls into the same area of maybes. The type of technology that we are using would allow our suppliers to maintain various data fields. We're still determining what makes sense.

**CW: What future plans do you have for the data warehouse?**

**BEITLER:** This is our future.... An integrated environment really changes the paradigm a bit. We'll have all these modules, and they'll all interact. The modules will be upgraded, but instead of ripping out the guts, the guts are continually upgraded. So we can change the focus of our energy from constantly putting in and taking out systems to modifying software to improve our processes and systems.

And really, the vendor is modifying it, so we can conduct the business of retailing instead of the business of supplying software.

*Goff is a freelance writer in New York.*

# Pitney Bowes

CONTINUED FROM PAGE 29

what it can deliver.

The data warehouse cost about \$1.5 million, most of which involved salaries and the cost of outsourcing the actual data matching. The project is taking a long time for several reasons: Resources are limited, the team doesn't consist of trained data warehouse experts, and the technical challenges are daunting.

On the other hand, Schwartz said it is remarkable that a small team could pull off a project of this magnitude. In fact, he made a point of limiting efforts to collecting marketing information on U.S. customers and creating a database view of the company's top U.S. customers.

## POLITICAL BARRIERS

The first hurdle for the team, which has fluctuated from two to five people, was political: how to persuade people to part with their customer lists, product information and leasing and service contracts. Schwartz pitched each unit on being able to gain access to new accounts from other business units and to create cross-selling opportunities.

Working with a steering committee, Schwartz's team began the formidable task of matching internal information from various departments with a database from Dun & Bradstreet Corp. that contained a global directory of general business information. That would let Schwartz get data on customers and identify noncustomers in particular vertical markets.

The group created an algorithm, which it is trying to perfect, that tries to make sense of the matrix of relationships that the various Pitney Bowes divisions might have with a single customer.

Slowly, the team had some successes. For example, when the CEO asked for a customer profile before a major sales presentation, Schwartz delivered a report in a couple of weeks rather than the nine months it took before. "There was nowhere else anyone would even think about going in the organization for this information," said team member Cary Shaw.

Last year, requests for information started coming in fast and furious, and the team was riding high. But all of the quality issues hadn't been ironed out, and eventually a whopper of an error appeared in a report. One customer appeared in different parts of the database with two different, but similar, company names, and the search process failed to recognize both names as being essentially the same customer. As a result, the report failed to include a sizable chunk of revenue that was generated by the "second" company.

Schwartz went back to the drawing board, redoubling the group's focus on making sure the data was clean, the matches were accurate and the information was reliable.

The group has recovered nicely. Today, it handles about 45 queries per month and plans to slowly expand the database to include the company's international customers. Also, the database is

now updated quarterly and the group wants to increase the frequency of those updates.

The CEO uses the group's reports to bolster relationships with top customers. The direct mail unit uses the information for target marketing. Lots of noncustomers are being developed for the sales staff. And customer information can be broken down by industry, product line and geographic area.

Thus far, only a few users outside the group have been allowed to do their own queries using Microsoft Access. However, select users can browse the customer database on the company intranet. And Schwartz plans eventually to use the internet to push reports to key executives. □

*Pitney Bowes' Lynn Schwartz's team "built a data warehouse and 'built it as a matter of survival'."*

# Atre: Data unity

CONTINUED FROM PAGE 29

created by disparate operational systems, a data warehouse can't magically solve deep-rooted problems without work. But if done properly, it does make unity approachable.

A data warehouse can't support cross-departmental analysis unless the data permits it. To enable such analysis, IT staff may need to model what the departments do and what their data means. They may even need to study and revamp business processes. That's an important point that ends often when it's just a data warehouse is built, perhaps because IT has failed to manage expectations or has oversold the benefits.

For example, how are you going to track the profitability of a product all the way from conception to sales to delivery if each department has differences in what they call things (such as an order) and how they capture costs? What can you do if the business processes of the shipping department have never been documented or studied?

## INSULAR OUTLOOK

One big reason why processes aren't adequately documented and data isn't defined well is that many business activities are fairly self-contained. In other words, the department hasn't needed to explain what it does, except in the broadest terms, to outsiders.

One solution is to reconcile the differences in processes and definitions. You don't have to do

this for the whole organization before building anything. Instead, create a high-level model of business and data processes for all business functions, then try to resolve basic inconsistencies. Finally, do the detailed reconciliation, iteratively, one data start at a time.

A second approach is to manage the data inconsistencies by using meta-data held in a repository. Accurate meta-data will define what the different chunks of data represent and help users avoid mixing incompatible data during analysis. A meta-data repository is a re-invention of the idea of a data dictionary/directory and can be even more difficult to deploy. But the meta-data repository plays a key role in supporting unity in the data warehouse.

If your staff has been involved

in building a data dictionary, this experience could help with the process of implementing a meta-data repository and, more generally, with the challenges of reconciling differences among groups of users.

As with the data dictionary, the process of designing the repository is fraught with politics and power struggles. To create an infrastructure for a meta-data repository, you must obtain solid management support, backed up by a strong sponsor. Management support is also crucial in getting the users in different departments to commit. □

*Atre is president of Atre Group, Inc., a consulting firm in Fort Chester, N.Y., that specializes in data warehousing and database technology. Her e-mail address is shaks@atre.com.*

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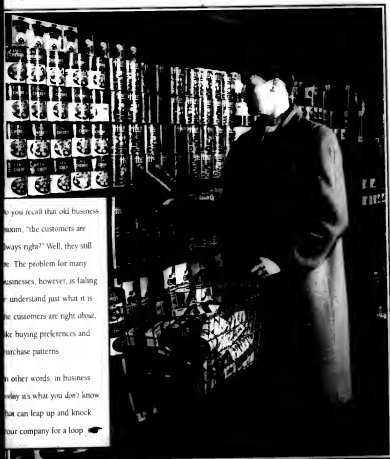
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## Tools to Reinvent Decision Support



do you recall that old business maxim, "the customers are always right?" Well, they still are. The problem for many businesses, however, is failing to understand just what it is the customers are right about, like buying preferences and purchase patterns.

In other words, in business today it's what you don't know that can leap up and knock your company for a loop.

From SAS Institute Inc.

For a credit card company, the danger comes from not knowing who is likely to default on payments, despite knowing who is likely to purchase on credit. For a mail order company, the threat lies in not knowing which individuals are most likely to purchase products. For a retailer, knowing what has sold in the past is simply not a reliable predictor of how and what consumers are likely to buy tomorrow.

You have to search deeply in the corporate data reservoirs to find this kind of information, and you need specialized tools to do so. For decades, that data was accessible only to programmers with sophisticated skills, who generated periodic reports based on fixed parameters. These reports treated the business as though it were in a static state. Today, we know that to be far from the truth.

## Pointing the Way for Your Customer-Driven Company

The need for data analysis that matches the ever-more dynamic nature of business has given rise in recent years to the data warehouse concept, wherein complex and non-uniform operational data is transformed or "disassembled" and optimized for use by decision support tools. The advent of these tools has moved data analysis forever out of the glass-house report-generation era.

SIM: the most sophisticated data analyses continue to require a fairly high level of user sophistication. In fact, many businesses today funnel millions of dollars to third-party firms to perform customer data analysis. They do so at some risk, though, at a time when intimate knowledge of one's customers can spell the difference between success and failure.

Now decision support is evolving into a new era, one in which very powerful customer and market analysis tools can be used by just about any business decision maker. It is the point-and-click era of decision support, and it is light years ahead of its glass-house forebears.

**This path to highly sophisticated business analysis is the result of a fully integrated approach to data warehousing, data mining and decision support taken by one company: SAS Institute, working in tandem with premier hardware partners such as Sun Microsystems, Inc.**

## SAS Institute Brings Leadership and Definition to an Emerging Market

"Data mining software lacks a clear definition and needs a market leader to bring it momentum," according to market research firm International Data Corp. (IDC), based in Framingham, Mass. IDC notes that "the entry of SAS...into this market will prompt industrial-strength, server-oriented data mining activity."

In a major study released in June, *Data Mining Market Trends 1997-1998*, the Meta Group describes SAS decision support software as "a comprehensive architecture for data warehousing." One result, the report states, is that SAS software received the highest percentage of endorsements from users who were asked for their preference for data mining software and service vendors. Simply stated by Aaron Zornes, Meta executive vice president, "SAS Institute is building a complete solution."



Bill Gammage  
President of Research Development  
Sentry Research

Wayne Eckerson  
Senior Analyst  
Patricia Seybold Group

## How Can OLAP Help Predict Your Business Future?

Data mining and OLAP are complementary technologies. Data mining helps you generate a hypothesis; OLAP helps you test it. With SAS OLAP tools, you get the ability to create multiple views of your business data, which enables comprehensive what-if modeling. Business analysts use OLAP to spot trends in their business and the industry, as well as to generate forecasts.

Begin by specifying categories in which data is organized—such as sales by product, by region or over a period of time. Then create models to predict future outcomes.

## Where Does Data Mining Come into Play?

Data mining makes use of technologies such as neural networks, rule induction and clustering to discover relationships and patterns among data in your vast corporate data reservoir. You can think of these relationships and patterns in the data as being hidden.

Armed with the knowledge of these formerly hidden relationships in data, business analysts can now make informed predictions. Such as stock market forecasts. Health care outcomes. Future profitability. And customer preferences, to name a few.

Thus OLAP is used to analyze the data in a warehouse or data mart and answer why certain known patterns in the data are true. For example, why are sales higher in the Midwest in the summer? Data mining searches for unknown patterns and relationships. That is, data mining is used to generate a hypothesis rather than create one. Data mining might link those increased sales in the Midwest to changes in advertising made by the marketing department.

## Why Choose the SAS Solution?

What separates the SAS data mining solution from the rest of the pack is its breadth of algorithms for building models. This broad array of algorithms, based on two decades of delivering data analysis solutions, gives SAS data mining users maximum freedom to discover the golden nuggets of information buried in their corporate data.

## How Does the SAS Data Mining Solution Maximize Your Data Warehousing Investment?

For IT managers, SAS Institute's data mining technology provides ways to exploit the detail data in an existing warehouse or data mart. For decision makers, it enables visual data-mining through a graphical user interface that combines heretofore unavailable ease of use with powerful analysis capabilities. And for business strategists, it means they won't need to rely as much on quantitative analysts to get what they need, direct from their desktops.

## SAS Institute-Sun Microsystems combination

From afar, Telequest Teleservices may look like most of the other 300 telemarketing companies scattered throughout the country, collectively selling products and services over the phone to millions of homes and businesses. But look closer and Arlington, Texas-based Telequest shows a unique face.

"We are truly an information company, and our use of information is what sets us apart from others in our field," notes Gordon McKenna, the founder and CEO of Telequest.

Paul Thompson, Telequest's senior vice president of corporate development, adds that, "Our customers want sophisticated reporting tools to see who is buying what and in which markets, and they want those tools to be flexible and user friendly. The SAS software-Sun combination delivers just that."

In a highly competitive market, Telequest has risen from obscurity ten years ago to the thirteenth largest telemarketing firm. In fact, it's been the first- or second-largest growing telemarketing firm for the past three years, according to *Telemarketing and Call Center Solutions Magazine*. The company's accounts include some of the most venerable names in business such as Sears, *The New York Times*, and MCI.

"The ability of the Sun-SAS Institute combination to scale was a major consideration," Thompson says. "We wanted a system that was world-class and backed by vendors who would be around for the long haul. We got all that and more."

The person most responsible for bringing Sun hardware and SAS software to Telequest is chief information officer Paul LoBue. He started Telequest out with a Sun SPARCstation 5, then moved quickly to a SPARCstation 20. Rapid growth and total satisfaction with the Sun hardware resulted in his buying a second SPARCstation 20, and finally a Sun Ultra Enterprise 3000 bought earlier this year, running Solaris 2.51.

"It's the Sun platform for all our machine computing," notes LoBue. "It's perfect for running all the SAS programs we use."

He adds that "the ability of SAS software to read in just about any kind of data you can imagine and then write it out in any format you want, and to do so very quickly, is unmatched. We never worry about new client requests no matter how large, because the Sun-SAS software combination scales with ease."

### Empowering Clients Through the Web

This Web-enabled tool will relieve the Telequest staff of having to fax client reports each morning. Instead, Telequest will provide clients with SAS-generated reports in graphical format—accessible upon client demand across the Internet from Telequest's own intranet.

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## Managing

**Turf battle**  
Charlotte, N.C.'s emergence as a financial hub has created plenty of IS jobs—but also some pain. Page 90

Intelligent agents and global data warehouses are poised to explode in popularity. But they're only as good as the data you feed them, so you run the risk of taking the information...



# YOU of CONTEXT

## Uh-oh.

Look what the intelligent agent dragged in:

• Two numbers for Exxon's 1995 net sales figures. Which is right: \$122 billion or \$108 billion?

• A foreign bond due 01-09-05. Is that Jan. 3, 2005, March 1, 2005, or March 5, 2001?

• The number 26400 in a spreadsheet cell. Is that in dollars, marks, French or Swiss francs? If it's U.S. currency, is that \$462,000 or \$46,200?

• Five banks that offer the best deals on 30-year mortgages. But do they figure in the annual percentage rate? Or points?

• A dip in the Brazilian sales figures. Was it a bad year, or did the São Paulo office change its accounting rules?

ARE YOU DREAMING OF THE DAY when intelligent agents will roam the World Wide Web and find you the best deal on a mortgage? Or are you building a global, corporatewide data warehouse right now? Large data warehouses and Web-scrapers may wind up as newfangled Towers of Babel if they can't make sense out of information that comes from different sources or extract data from Web pages with different formats. A few small vendors and a team of researchers at MIT directed by Professor Stuart E. Madnick are beginning to solve these problems, but a total solution appears to be years away.

Madnick calls this the "data context" problem: Data in different environments can mean different things, just as the word "Java" means different things to programmers and truck drivers. In the U.S., a "D" grade means barely passing; in Australia, a "D" grade means "with distinction."

Until now, this has been an annoying but limited issue, Madnick says. Most companies have only attempted to integrate internal data, or data from one country. Data dictionaries, developed by techies for techies, were more concerned with consistency in names, not what the names meant. But with millions of Web pages out there, data warehouse-

es going global and millions of end users launching queries on their own, it will be harder to live with data that contains hidden assumptions or data that obscures important distinctions. The problem isn't likely to affect data marts because they include information from fewer and more homogeneous sources, says Peter M. Storer, a vice president at Altr Associates, Inc., a consultancy in Port Chester, N.Y., that works on data warehouses.

Dick Hudson, chief information officer at Global Marine, Inc., an off-shore drilling company in Houston, wants to help his firm's purchasers shop on the Web. The company's top suppliers are creating online catalogs; instead of browsing to find drill pipes, he'd like an intelligent agent to do comparative shopping and download the results onto a spreadsheet. But if this agent is oblivious to fittings, collars and other drill-pipe variants, it will download data on the wrong kinds of

pipes and buyers will order the wrong ones. "You don't want to order 100,000 feet of drill pipe and get apples when you want oranges," Hudson says.

"We are starting to build a global data warehouse, and the context issue is becoming crucial," says a regional informa-

Out of context, page 91

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# OO of CONTEXT

CONTINUED FROM PAGE 33

tion technology manager at a Fortune 100 company who asked to remain anonymous. "When you report sales, some sales managers put in discounts, others won't. Some include freight, some don't. In big regions like Asia, the differences can be astronomical."

It's a supply-chain issue, too. Has a particular order been shipped or not? At this firm, query one system and the answer is no, query another and the answer is yes. That's because these two supply-chain systems define a key word differently.

## NEW AVENUES

On the other hand, solving the problem could provide new opportunities.

Raymond C. Bonker, a vice president at Merrill Lynch, sees a payoff in consolidating information overload. His vision: Pull financial data off the Internet, add information from external sources and internal databases, and deliver a money-making mix of information to sales staff, researchers and traders in useful, summary form.

That could result in better, faster decision-making and less time wasted on browsing, calculating or deciphering the many monitors that crowd their desks. MIT is running a pilot project with Merrill Lynch to build such a system, said Bonker, who works in Merrill Lynch's Jersey City, N.J., office.

Primark Corp., in Waltham, Mass., also is working with Madnick. Primark integrates business information from hundreds of sources around the world and

feeds it to Wall Street-type firms. Straightening out data content problems and other quality control tasks requires 150 people, says Chief Technology Officer Bob Brammer. If technology could whip the data content problem, Brammer could reduce labor and production costs and get information to customers more quickly. "If a company has released its second-quarter report and that information is on our system faster than on our competitor's, that's an advantage," Brammer says.

Madnick sees other opportunities: The U.S. military wants ways to get material in a hurry without stocking inventories. "Trusted agents" could scan suppliers' inventory and production planning systems to quickly find items they need. Mail-order companies could take a list of shipments, compare it with data from UPS and Federal Express' package-tracking Web sites, and automatically generate letters of apology to anyone whose shipments are late.

Solving the data content dilemma could even make information systems look good. Says the anonymous IS manager, "To me, fixing these problems will mean a lot. They take a lot of credibility out of the work that we do. Everybody blames the systems, when it's not just the systems but the business practices."

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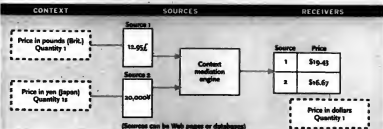
■ **Prioritize:** On data warehousing projects, seek agreement on the most critical terms and data, but think hard about whether every data point deserves the effort, advises Dale Goodhue, an assistant professor at the University of Georgia in Athens who is studying data warehousing efforts.

■ **Be skeptical about data:** "Anybody who completely relies on a computer report to make a decision needs to have their brains checked," says data warehousing expert Shaku Atri, president of Atri Associates, Inc. in Fort Chester, N.Y.

It's always good to not place too much trust in computers, but the fact remains that a system that can't be trusted won't be used. That's why the data context problem is likely to slow down the use of intelligent agents and global data warehouses. □

Alter is Computerworld's senior editor, Managing and editor of the Leadership series. His E-mail address is alter\_alter@cw.com.

A group led by MIT Professor Stuart Madnick (at left) is building a "context mediation engine" that can make information from many sources read the same way, such as translating all measurements to inches and feet instead of centimeters. In this example, a price for a particular product in British pounds and Japanese yen is run through the engine and comes out in dollars.





# OUT of CONTEXT

CONTINUED FROM PAGE 85

tion technology manager at a Fortune 100 company who asked to remain anonymous. "When you report sales, some sales managers put in discounts others won't. Some include freight, some don't. In big regions like Asia, the differences can be astronomical."

"It's a supply-chain issue, too. Has a particular order been shipped or not? At this firm, query one system and the answer is yes, query another and the answer is no. That's because these two supply-chain systems define a key word differently."

## NEW AVENUES

On the other hand, solving the problem could provide new opportunities.

Raymond C. Bonker, a vice president at Merrill Lynch, sees a payoff in combining information overload. His vision: Pull financial data off the Internet, add information from external sources and internal databases, and deliver a money-making mix of information to sales staff, researchers and traders in useful, summary form.

That could result in better, faster decision-making and less time wasted on browsing, calculating or deciphering the money monitors that crowd their desks. MIT is running a pilot project with Merrill Lynch to build such a system, said Bonker, who works in Merrill Lynch's Jersey City, N.J., office.

Primark Corp., in Waltham, Mass., also is working with Madnick. Primark integrates business information from hundreds of sources around the world and

feeds it to Wall Street-type firms. Straightening out data context problems and other quality control tasks requires 150 people, says Chief Technology Officer Bob Brammer. If technology could whip the data context problem, Brammer could reduce labor and production costs and get information to customers more quickly. "If a company has released its second-quarter report and that information is at our system faster than on our competitor's, that's an advantage," Brammer says.

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## The \$122 (or \$108) billion question

How might inconsistent data show up on the Web? MIT professor Stuart E. Madnick points to [www.pricer.com/top\\_companies/](http://www.pricer.com/top_companies/), a demonstration Web page set up by Primark.

The page is linked to lists of the top 25 U.S. and international companies that provide different numbers for the same company. For example, Exxon's net sales as of Dec. 31, 1995 are listed as \$121,804,000,000 on the U.S. list and \$107,955,000,000 on the international list. Why the difference? The U.S. list comes from its "Disclosure" service, which includes interest income, excise taxes and other income. But the international list comes from its "Worldscope" service, which doesn't. Kelly Services, Inc. is listed as having 660,600 employees on the U.S. list, but it doesn't show up on the international top 25. That's because Disclosure lists its nonpermanent employees, Workscope doesn't. — Allan Alter

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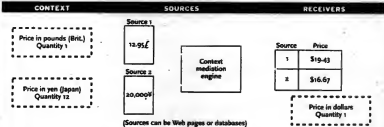
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STUART MADNICK

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# DEFENDING their TURF

Charlotte, N.C.'s emergence as a financial hub has created plenty of IS jobs, but also some southern discomfort for Belk Stores, a retail institution. Other companies have raided Belk for IS personnel. Belk's response? Make IS a better place to work. So far, the results have been positive.

Bank employs 4,000. Belk's IS staff of 200 is still migrating from legacy systems to client/server, while the banks deploy state-of-the-art technologies in investment banking, global finance and mutual funds

competitive. He also put Belk's own troops into the recruiting business, offering a \$1,000 referral bonus for an employee who recommends a new hire.

Belk also has established long-term relationships with several contracting firms that allow it to fill openings quickly with right-to-hire contractors. "This helps us only make a step rather than lose a whole mile when we do have turnover," Lashley says. He says he hopes the relationships will bring the best talent while lowering the raiding rate.

For the banks, raiding is a minor issue. "There's not a significant amount going on," says Chris Cagle, vice president for architecture and planning at First Union. "There is some movement back and forth [between the banks], but most of that is at the technician level: people getting frustrated and the grass is greener."

But at Belk, raiding has been a one-way street, according to two recruiters. "People don't knock on the door to get into Belk; they raid from Belk," one says. "An Oracle database administrator at Belk knows he can get more at NationsBank," adds another. "Plus, there are a zillion other people looking for him. It's not surprising to see people jumping from NationsBank to First Union, but they're all jumping from Belk."

"It is a major problem and has gotten worse over the last year," Lashley says.

Belk has tried several approaches to ease the problem. A couple of years ago, when Belk was being heavily raided, a Belk executive called an executive he knew in the raiding company and asked that it stop. The company complied, but Belk found itself in deeper trouble. "This had a very negative impact on morale because people began to feel trapped," Lashley says. Belk decided that rather

transfers. Under the direction of Conda Lashley, senior vice president for systems development at Belk Store Services, Inc., which handles IS, Belk has been trying to compete for IS talent with the banks and a range of other second-tier players.

But it's an uphill battle. IS recruiting in Charlotte is fast and furious. The competition for personnel is so strong that NationsBank has actually "insourced" recruiting. "We realized we were hiring so many people that we ought to take that recruiting talent and bring it right into the bank," says Rick Parsons, president of direct banking.

Belk's situation is tougher. It has a reputation among some recruiters as being tight with a buck. "Belk is retail," says one recruiter. "Retail hours, benefits are poor, pay is relatively poor. A lot of people go into Belk and then leave."

Adds another recruiter: "If NationsBank wants the skill, the rate is not an issue. They say, 'Go to New York and find these people and we'll pay.' Belk says, 'We won't pay more than \$50 an hour.'"

Lashley has been fighting this image by upgrading technology, as well as compensation packages that were less than



**Part II in a special series**  
Finding and keeping good people is the chief problem facing most IS managers. Computerworld's Managing section this month will focus on the "Three I's" of staffing: retention, recruitment and raiding.

**In upcoming issues:**  
Next week: As technical skills become more scarce, IS managers get creative with their recruiting. And human resources departments, which are sometimes a hindrance, are happy to help. Sept. 29: Some firms have pushed college recruiting up a few notches to develop IS "farm teams." And columnist Jim Champy stresses staff retention for IS organizations.

**Do you have some thoughts on retention, recruitment and raiding of IS professionals? Share them in a forum this month at our Web site at [www.computerworld.com](http://www.computerworld.com).**

By Kathleen Melnyk

**I**t's tough to compete for IS talent when you're a retail store in a city dominated by banking giants.

Charlotte, N.C. financial capital of the South, has become a mecca for information systems professionals, and its two dominant banks are the mosques. First Union Corp., the country's sixth-largest bank, sees itself as an up-and-comer in an up-and-coming city. The bank looks like a giant jukebox, towering 50 stories above downtown.

Across the street is NationsBank, the country's fourth largest bank. NationsBank Corp. is the big kid on the block. Its building is a smidgen shorter, but, characteristically, NationsBank added a spire so it looms above First Union on the skyline.

Belk Stores has no part in this spat, although the retailer is no 99-pound weakling. It's the largest privately owned department store chain in the U.S. and has 19th century roots in the community.

But despite its eminence, Belk isn't in the same IS league as the banks. Along with several second-tier financial institutions, the banks have turned Charlotte into the country's second largest financial center.

Though Belk employs about 1,300 in Charlotte, First Union has that many in its IS department alone, and Nations-

than stop other companies from raiding, it would push to keep its people happy.

"We have spent the last two years making Belk MIS a more rewarding place to work," he says. "First and foremost, we treat our people with respect. We let our associates identify which projects they would like and over 90% of the staff have been assigned to their first or second choice."

Charlotte is a mixed blessing for Belk. When auditioning for IS talent, the big banks are a hard, if not impossible, act to follow. But Belk's is a different act. The bank's business is technology; Belk's is retail sales. And Charlotte's boomtown atmosphere assures a continuing flow of new talent from around the country. "The influx of people helps Belk survive," one recruiter says.

Meanwhile, Lashley's attention to employee satisfaction may finally be helping. In the past year, 36% of Belk's new hires in systems development came from other area companies. And Lashley has noticed another positive little trend. "We had had several people leave and then ask to come back," he says. □

Melnyk is a freelance writer in Danbury, Mass.



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Acer 



# COMPUTERS HAVE YET TO MAKE COMPANIES MORE PRODUCTIVE

PAUL A. STRASSMANN



**T**here they go again. Once more, the IT optimists say computers are the key to prosperity because they increase productivity.

And once again, it's just wishful thinking — only the people making the wishes are gaining influence.

Wall Street bankers, CEOs and even Federal Reserve Chairman Alan Greenspan are linking much of the '90s bull market to IT-induced productivity gains.

The reasoning goes like this: The boom is caused by investors' expectations that the economy will continue to deliver superior profits (because of) steadily rising productivity. That largely comes from the use of IT. The optimists make their case with an assortment of isolated observations about work acceleration and labor cost reductions based on anecdotes that appear in the media.

The stakes in these debates are enormous. On one hand, the stock market's performance, the prospects of achieving a balanced federal budget and the ability to finance Social Security and Medicare all depend on the expectation that productivity will rise steadily. On the IS front, the presumption that computers improve productivity legitimizes proposals to invest in computers and increase advertising in computer magazines.

The Bureau of Labor Statistics' own numbers can't pop these bubbles of optimism, even though they indicate that the rate of productivity increases has slowed, not risen, in recent years. But those statistics can't be relied upon because they don't properly account for output in the public and service sectors.

The only way to settle the argument is to look at corporate performance data.

**EVALUATING PRODUCTIVITY GAINS**  
U.S. industrial corporations include in their financial statements an item called Sales, General & Administrative Cost (SG&A). It represents the costs of coordinating, controlling, guiding, promoting, motivating, training and managing employees, customers and suppliers while making and delivering the goods. It's a reasonable approximation of the costs of managing information, including the costs of computer hardware, software, networks and staff. The SG&A largely accounts for a firm's overhead. It also reflects the costs devoted to the generation and consumption of all data.

If IT would have increased the productivity of those involved in handling information, then it would now take less SG&A to manage every dollar's worth of Cost of Goods Sold (COG). That accounts for the expenses for materials and labor to make those goods.

A more information-productive firm would be able to process more goods

with less money spent on information-related activities.

Take a case where a firm spends \$100 million in COG to make boxes. It also needs \$40 million in sales and administrative expense to manage production, distribution and selling. An advanced information system is then introduced. The company still spends \$100 million to make the same boxes, but it now requires only \$30 million in sales and administrative expense to operate, including the cost of the new computer system. Clearly, the productivity of information management shows an improvement.

## GAINS FOR U.S. INDUSTRIAL FIRMS

Whether U.S. industrial firms, after a decade of intensive computerization and spending about \$500 billion on new computer applications, can now operate

costs confirms a drop in productivity.

## SIGNIFICANCE FOR CIOs

Information costs have risen, not declined, in relation to other production costs. Neither client/server, the Internet nor computer networks have so far materially improved the productivity of information handling by the premier U.S. industrial corporations. In 1996, \$1.1 trillion in cost of goods required \$100.5 billion in SG&A expense. That ratio is now lower than it was in the period from 1987 through 1990. I found a similar gap in the productivity for the U.S. banks I surveyed.

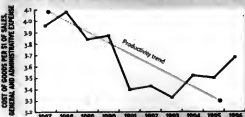
I consider this proof that productivity of the information-handling workforce, which now accounts for 59% of U.S. employment, has worsened, not improved. The time has come to face the facts: The stock-market analysts and the overoptimistic CIOs are being misled.

It's a myth that computers have measurably increased the overall productivity of information management. Whatever gains may have happened took place in factories and warehouses.

Such a realization will lead to placing IT expenses — which now support mostly office workers — under much closer scrutiny to make sure that costs are not only contained, but that the computerized work creates an innovative stream of new profits.

## WHAT ARE THEY GETTING FOR THEIR IT BUCKS?

Productivity of information resources at the 66 largest U.S. industrial corporations



with less information management is something that can be tested. How much COG is supported for every dollar spent on SG&A?

To give the optimists their best shot, I examined the financial records over the past 10 years of the 66 largest and most prestigious U.S. industrial corporations, each with annual revenue of more than \$10 billion (see chart).

Contrary to expectations, productivity hasn't improved during the past decade. The amount of SG&A required to manage every dollar's worth of COG hasn't fallen, despite massive IT investments. There was a steady increase in SG&A from 1987 through 1993.

Though I show gains in the productivity ratio since 1993, the cost of information management relative to COG was still higher last year than it was in 1987 and 1988.

I completed a similar analysis for 16 of the largest U.S. banks. The declining trend in the ratio of revenue to payroll

Whatever productivity gains may have been achieved through computerization of office work in the past decade have been squandered by the profligate waste of human and technological resources. The bureaucratization and complexity of business processes have also increased how much information processing is necessary to get anything accomplished, without benefits for the consumer.

If prosperity is to continue, we need to fulfill the promise of the Information Age. We must deploy IT so the office workforce can consistently deliver more valuable results with less effort. □

Strassmann ([www.strassmann.com](http://www.strassmann.com)) has tracked the productivity of information management in his books: *The Information Payoff* (1985), *The Business Value of Computers* (1990), *The Politics of Information Management* (1993) and *The Squandered Computer* (1997). This column is excerpted from his upcoming book, *Information Productivity*, due next fall.

# Solutions Profile:

During the recent 1997 Executive Technology Summit held at The Pinnacle Hilton Resort at Squaw Peak in Flagstaff, Arizona, CIO's and other senior level IT leaders from around the globe met and discussed three emerging technologies with some of today's brightest minds. The three technologies portrayed included Distributed Computing; Data Mining and Data Warehousing; and Doing Business with Internet Technologies.

Now in its fourth year, these IT leaders met with peers and industry experts to examine case studies and engage in open and honest dialogue. Within the Solution Lab portion of the program, ETS sponsor Red Brick Systems and its customer, Toyota Logistics Services, Inc., discussed business return-on-investment and competitive advantage through the use of data warehouse and data mining technology. Data warehousing is fast becoming a business imperative-businesses quick to deploy a successful data warehouse are seeing compelling gains in sales, marketing and profitability.

## Challenge

At Toyota Logistics Services, Inc., a subsidiary of Toyota Motor Sales, U.S.A., business analysts required quick, easy and direct access to data in order to continuously reduce costs and vehicle delivery lead times. Toyota needed to liberate its data from diverse operating systems, organize it around business topics and create a one-stop shop for "anyone, anytime" access to essential logistics data. It required a data warehouse that could support true ad hoc queries and yet still keep system development efforts lean.

## Solution

Toyota chose Red Brick. Red Brick's relational database, designed specifically for data warehouse applications, provides a star schema data architecture which is easy for business analysts to query. It returns fast and accurate results, while its fast load engine supports the use of detailed data rather than summaries which can hide key trends and prevent analyses on differing combinations. Data quality is monitored through referential integrity and Red Brick is highly scalable. Red Brick requires only minimal day-to-day support, allowing people to work on analysis rather than administration. Each of these performance criteria was necessary for Toyota to achieve a successful data warehouse project. Today, more Toyota business analysts have access to clean, high-quality data and use it to make day-to-day and project-related decisions faster and with greater confidence.

## Solution Provider

Red Brick Systems, Inc.

[www.redbrick.com](http://www.redbrick.com)



Carol Kaufman,  
Logistics Information Manager,  
Toyota Logistics Services, Inc.



Despite an early lead  
in technology, will  
America end up playing  
second fiddle?



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## Buyer's Guide

# Look Ma, I know hands!

BY CHRIS DEVONEY

[Oops, voice recognition still has flaws]

It's been a staple of science fiction for decades — a space traveler speaks to a computer, and the computer flawlessly records every word. Thanks to products such as Dragon Systems, Inc.'s NaturallySpeaking Personal Edition (\$400) and IBM's ViaVoice (\$149), speech recognition is moving from science fiction into an office-useable tool, provided your system is fast enough and quiet enough.

Previous generations of voice products, based on what is called discrete voice recognition, forced users to pause between spoken words, which slowed — the — process — and — disrupted — thought. The new products recognize continuous speech — controlled but conversationally paced speech. The only interruptions to the dictation are the user's own pauses or the need to correct unrecognized words.

Although each product initially recognizes about 80% of spoken words, each user must spend a tedious half hour to several hours reading passages of text to the computer to "train" the software. NaturallySpeaking relieves some tedium by offering interesting read-back text from books by Arthur C. Clarke and Dave Barry.

During my initial use, I made corrections to almost every sentence. As the products remember corrections and additions, the need for corrections rapidly declines until, after 40 hours of use (an estimated month's worth of dictation), the recognition rate plateaus and corrections are minimal.

The major difference between the products is in correcting mistakes. NaturallySpeaking lets users select replacement words from a list or mark the words to correct using the keyboard or voice. ViaVoice requires users to select the words via the keyboard. If typing skills are adequate, either program works well. If you are keyboard-averse, NaturallySpeaking has a pronounced advantage.

However, IBM can dictate text directly into its

notepad, and the text can then be pasted into any program, or you can dictate directly into Microsoft Word. NaturallySpeaking offers only the notepad approach. ViaVoice also offers a text-to-speech option and better support for multiple users. But you can't totally command the computer using speech with either product.

Additionally, both products have substantial system requirements: 333-MHz (NaturallySpeaking) or 350-MHz (ViaVoice) Pentium computers with 32M bytes of RAM for Windows 95 (or 48M bytes for Windows NT 4.0), plus a 16-bit or greater SoundBlaster compatible soundboard and about 50M bytes of disk space.

I found that speech recognition dropped with processors below 200 MHz. I also found that successful dictation requires a subdued (but not totally quiet) office. And mediocre sound hardware, which lacks immunity from the high-frequency noise of fast computers, severely affects recognition.

The SoundBlaster 16 and 32 boards have less noise immunity than the SoundBlaster

64 boards, some OEM SoundBlaster boards work better than others, and some notebooks don't fare well with the product.

On a 200-MHz Pentium Pro Gateway 2000, Inc. desktop and 333-MHz Pentium Gateway 2000 Solo notebook, my recognition rate varied between 85% and 93%. Dragon hit 94% on the desktop and 89% on the notebook. IBM reached 93% on the desktop and 93% on the notebook. On Gateway's 350-MHz Pentium Solo notebook, a 166-MHz Pentium MMX Hewlett-Packard Co. Omnibook 800 and a 266-MHz Pentium II Gateway desktop, the recognition rate ran in the upper 90 percentages (97%-99%). Because each percentage point translates to one added correction (and interruption) per 100 words dictated, the difference in error rates is important.

On good equipment, most people can be more productive dictating with either program than

Sketching up the winnow in the United Parcel Service strike, John Devoney, the APT-CIO's president, announced Tuesday that the nation's labor unions would lead the International Brotherhood of Teamsters \$10 million a week for "many, many weeks" to sustain members during the strike.

John Devoney (center)

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You might scratch your head in amazement when you see what ViaVoice (center) and NaturallySpeaking (bottom) can do to a news story (top).

they can typing documents such as draft letters and reports.

And by diminishing the dependency on typing skills when composing reports and documents, NaturallySpeaking and ViaVoice should open the corporate computer doors to those with physical challenges, repetitive stress injuries or just keyboard-phobia.

Improved versions are scheduled for release later this year, but corporations should give these products their immediate attention. □

DeVoney is a reviewer in Seattle. He can be reached at chrisd@cybernetic.com.

### PRODUCT REVIEW

#### Voice-recognition software



**NaturallySpeaking Personal Edition, Version 1.0**  
\$349 retail (\$199 street)

Dragon Systems, Inc., Newton, Mass.  
(800) 4DRAGON, [www.dragonsys.com](http://www.dragonsys.com)  
Best in voice recognition and most versatile when correcting errors



**ViaVoice**  
\$199 retail (\$149 street)

IBM, Armonk, N.Y.  
(800) 426-2688, [www.software.ibm.com](http://www.software.ibm.com)  
More generalized voice features and works directly with Microsoft Word

## USER VIEW

## Taking the "techie" out of the workflow design

Forte's Conductor lets the business side design the flow

By Kevin Burden

**S**ince workflow applications capture entire business processes, shouldn't process flows be designed by business rather than information technology people? Absolutely. And Conductor, a workflow development environment from Forte Software, Inc. allows just that.

With Conductor, Forte has separated the process logic from the application logic. It lowers the technical level required by business process designers, and business rules can evolve without modifying or bringing the application down, according to early users.

Without Conductor, the process flow is typically embedded in the application logic, making it impossible to hand off the flow design to anyone not versed in Forte coding procedures. And the slightest business process change could require significant reworking and retesting of the entire application.

Computerworld spoke with four Conductor beta users about their impressions and experiences with the product: Jason Cohen, CIO at Gerald Metals, Inc. in Stamford, Conn. Chris Kelly, systems architect at Anderson Corp. in Bayport, Minn. Andrew Small, consultant at Born Information Services in Wauzata, Minn. John Guerriere, IS director at Thoughtworks, Inc. in Chicago.

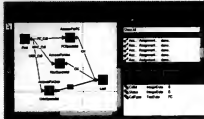
## Defining business rules

**Summary:** Modeling workflow with Conductor doesn't take much technical experience. Most of the code behind the business rules is generated by the Process Design Workshop, a graphical environment with built-in wizards for constructing simple flows, with the ability to design complex rules using the Forte fourth-generation language.

Users like the graphical metaphor and the ease with which flows were designed and reused. However, there is nothing in the workshop that instructs how workflow should be built, and its navigation motif needs improving.

**Small:** Defining the business rules are just a matter of dragging and dropping. Nearly all the code is generated for users — only when defining complex rules or specific industry or company logic do users need to write code in this stage. And because Conductor is completely integrated into Forte — only adding a few buttons to Forte's tool bar — users never have to leave the environment to code.

**Cohen:** Conductor is great for defining and running workflows, but it doesn't help in deriving or recoding workflows. It can't print out a textual or graphical hard copy of how the workflow looks.



Forte's Conductor features a graphical environment used for defining business processes

**Kelly:** Because you can define your business rules in Conductor without knowing the Forte development environment, we defined a role called process engineer, which are people with more business than technical knowledge. They design the process, then pass it off to our Forte developers to code the activities. When coding in the design stage is needed, it's been handled by a low-level programmer assigned to assist the process engineer.

It's been very easy to make changes to the workflow. Because the flow is separate from the application, the application doesn't need to be changed or taken off-line. We do think the navigation in the graphical environment needs improving. The tab folder motif is difficult to read and limits navigation possibilities.

## Coding

**Summary:** Ideally, Conductor should be

in the hands of the business analyst, with IT programmers completely out of the loop. Users say Forte is about 95% there. Most of the rules are very straightforward, and business analysts should be able to write 80% of them, according to Cohen. But conditional "if, then" statements are probably too complex for the typical business analyst to master.

**Guerriere:** Because Conductor is a Forte add-on and the actual activities where specific tasks are done need to be coded, users need someone on staff who knows the Forte development environment.

**Kelly:** Coding the activities where the process meets the application can be done by a developer with only a couple months of Forte training. For those architecting applications, it may be six months or longer.

## Performance

**Summary:** Although none of the interviewed users have a workflow application ready for performance testing, none are worrying too much. Conductor supports multiple process engines, so scalability and reliability are assumed. And the code generated by Conductor "looks very flat and built for speed," Kelly says.

**Cohen:** Performance isn't much of an issue with Conductor. Performance comes from the engine, and Forte did architect it properly. The engine is very scalable. I'm able to run multiple parallel engines and can cleverly distribute the engine processing the way I want.

**Kelly:** Although we haven't been able to test the application's performance, we're confident we're going to like what we get. Other applications we've developed in Forte's Application Environment have scaled beyond our demands, so we know it's technologically capable.

## Administration

**Summary:** Conductor includes an administration console that users say is extremely comprehensive and intuitive. Administrators can see who is logged on and what tasks each person is authorized to do. They also can start and stop engines and monitor the engines' overall

## USER VIEW

## FORTE CONDUCTOR

Forte Software, Inc.  
Oakland, Calif.  
(510) 869-3400  
www.forte.com

Availability: Q4 1997

**Platform:** Conductor's Process Engine runs on all major open systems platforms. Conductor's client-based components run under Windows, Macintosh and Open Group's Motif.

**Pricing:** \$2,600 to \$4,000 per developer license

status. But the console isn't customizable, and it's unable to notify administrators of activities they deem exceptional.

**Cohen:** Conductor's audit trail is excellent. But the console requires a person to monitor the activity, when what I really want is the system to monitor itself. I'd rather have the system track activities, then notify me only on an exception basis. My feeling is, I should be able to subscribe to any event the system is aware of and have it notify me in real time when the event is completed. This is a basic function of a workflow environment, and Conductor doesn't do it.

**Kelly:** We're extremely satisfied with the wealth of information the console delivers. But we haven't been able to customize it, so only specific variables are accessible. There's certain information we want for management eyes only, and right now, administrators see everything.

## Support

**Summary:** Forte hasn't yet tailored a class for business analysts, who are the consumers of this product. Users say Forte needs a class that blends material on business processes re-engineering with Forte terminology so business analysts can write the routing logic that's needed.

**Kelly:** The manuals need to give more guidance on what should be done first. We didn't know if we should start coding the process steps, then add the business rules or do it in reverse. Forte's seminars are only tool-focused, they don't offer anything that touches the building process. □

Burden is Computerworld's features writer. Buyer's Guide.

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## In Depth

I came this close to crossing Betty Crocker off my Christmas card list.

# operators

are standing

GENERAL MILLS, INC. launched [www.bettycrocker.com](http://www.bettycrocker.com) in July with much fanfare. One of the World Wide Web site's most popular features is "Ask Betty," where bakers and homemakers are invited to ask questions of or share thoughts with the trained, fictitious spokeswoman.

I asked Betty Crocker why my wife's chocolate-chip cookies are always "either raw on the inside or burnt on the outside." Furthermore, I asked how I might tactfully share baking tips with my wife. Why not? This was no faceless corporation I was chatting with; this was Betty-for-crying-out-loud-Crocker, confidante to Americans since 1921.

Well, Betty Crocker blew me off. At first, anyway.

And she was not alone. In a recent test, I sent electronic-mail queries to big-name companies to test their response time. It turned out to be lousy, given that consumers are accustomed to having their questions answered on a call-center line before they hang up the phone. Of the 23 companies contacted, only nine responded within 24 hours. Three didn't reply at all, and two responded only after a second E-mail message was sent.

In other words, Web customers aren't getting the quick responses they've come to expect from 800-number telephone call centers. Whether shopping from a catalog or fuming in a broken-down car, when consumers want support, they want it now and they want it toll-free.

Increasingly, they want it on the Web.

David M. Cooperstein, an analyst at Cambridge, Mass.-based Forrester Research, Inc., says about 1% or 2% of consumer communication with U.S. businesses is via E-mail. Forrester predicts this will grow to about 5% by the end of the decade. As a percentage, that's low. But as a raw number, Cooperstein points out, "that's a lot of E-mail."

Businesses that ignore or underestimate that development in customer service are nuts. For one thing, the people sending E-mail are precisely the educated, high-income opinion leaders that marketers drool over.

But many businesses are ill prepared to handle hundreds of E-mail messages from consumers.

So information systems departments will have to take the lead in two arenas. First, they must evaluate an emerging breed of response-center technology that routes and manages the incoming queries. Second, IS may have to referee disputes between marketing departments, which want to slap together a Web presence pronto, and traditional call centers, which are routine-driven and more skeptical about adding the new technology and responsibilities.

### the e-mail challenge

Most of my E-mail inquiries went to Fortune 500 companies. I filled out all electronic forms completely and accurately, and I always requested a speedy reply.

Disregarding Betty Crocker for the moment, all but three companies sent a reply of some sort. Mobil Corp., Nike, Inc. and US Airways Group, Inc. sent nothing. Nada. Zilch.

Microsoft Corp. gets an incomplete. My message went to a page that wasn't intended for two-way communication, a spokeswoman said. Fooled me. But upon further review, I declined to lump Microsoft in with the no-shows.

A Coca-Cola Co. spokeswoman said the company never got my first query, so I tried again and got a response — 69 hours later. Mobil said my message was probably a victim of a systems changeover in one of its 13 mailboxes. Nike has been overwhelmed by 2,000 E-mails a day and is just putting autoreply software in place. Ditte US Airways.

Most companies that did reply took too long to do so. Customer satisfaction experts say consumer inquiries, whether received by phone or E-mail, should be answered the same business day they're received. Failing that, they should be answered within 24 hours. Only nine companies in the study hit the 24-hour mark.

The quality and thoroughness of the responses was a pleasant surprise. For the most part, the people answering E-mail — whether response center workers or product-line experts dragooned into duty — take the work seriously, even when the question is a bit off-topic.



For instance, representatives at Du Pont Co. in Wilmington, Del., politely answered my query (when was Keilar invented?) and threw in the inventors' names to boot.

I received rapid autoreplies from Wal-Mart Stores, Inc. in Bentonville, Ark., and New York-based AT&T Corp. informing me that my query had been received and would be addressed.

Autoreplies are intended to reassure consumers that they've been heard.

AT&T followed up with a thorough response six hours later. Wal-Mart's reply, on the other hand, merely requested a home address, to which company President and CEO David Glass sent a content-free form letter a few days later.

## say it ain't so

But my biggest concern was the feeling that I'd been stiffed by Betty Crocker. Crushed, I called General Mills in Minneapolis and spoke with Cindy Murphy, whose title is Betty Crocker Equity Manager.

Murphy is proud of Ask Betty.

"There are over 100 E-mails to Betty every day," she said. Murphy trains a select group of General Mills customer service representatives in "Betty-speak." That ensures that E-mail writers receive consistent responses that, in addition to helpful facts, include a dollop of Betty's charming wit.

As for response time, "We try to turn them around within one working day," Murphy said. But she confessed that the site has lost enough E-mail so that it recently fired its Internet service provider and now routes all traffic through its own servers.

Ah, renewed hope! Maybe Betty just never got my E-mail. Heartened, I sent it again and started the stopwatch.

Here I must confess that my wife is in fact a superb baker whose chocolate-chip cookies are always perfect. Had Betty somehow divined my fib? Betty is warm, but she suffers no fools gladly. Did she see right through me?

Would Betty Crocker stand me up again?

## we have a winnah!

Betty and I were going through a rough spell, but Marian Paine is without doubt my hero. Paine is a consumer specialist at General Electric Co.'s GE Answer Center. She's worked at the Louisville, Ky., center for more than 11 years answering phone calls and, since last year, E-mail.

And boy, can Paine answer E-mail.

I sent GE an intentionally vague question about my dishwasher at 2:45 p.m. At 3:19 p.m. I received a thorough answer that pointed out that I'd never registered the dishwasher with GE (true enough) but nevertheless took a stab at diagnosing the problem and told me where else I could turn for help.

The reply was initiated "MF." This turned out to be Paine.

The grandmother of four is humble when informed she is the E-mail response champ. "If my teammates hadn't carried their load," she says, "I wouldn't be able to answer so quickly."

Fairfield, Conn.-based GE was one of the first companies to offer customers a 24-hour help line, so it's no surprise the company has emerged as an E-mail leader. Workers rotate from the phones to the PC, taking four-hour E-mail shifts. A GE spokesman says the Answer Center receives about 1,100 E-mail queries each month.

## dropping the bucket

E-mail centers — offshoots of call centers — are so new that there's little consistency in their organization. Some customer-response centers dedicate a few workers to the Internet full-time, leaving the rest to answer phones. Some, like the GE Answer Center, rotate representatives through both media. But at this early stage, most businesses rely on what Martin Prunty, a call-center consultant and president of the Scottsdale, Ariz.-based Telecom Group, calls the "E-mail bucket."

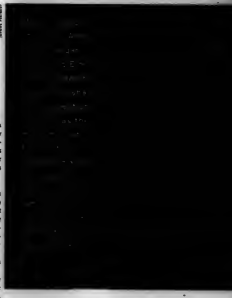
The E-mail bucket is a single address that receives all of a business' inquiries, which must then be routed to the appropriate department or expert.

Prunty says this adds to the workload of employees outside the response center, who find it tempting to put the query at the bottom of their to-do list.

Case in point: I was flustered that my question for Chicago-based Amoco Corp. regarding gasoline octane was answered by a senior research engineer. But I waited five and a half days for the reply. (Mark that with an asterisk; the engineer apologized and said I was the victim of a typo in the address field.)

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MARK HANAUER



# 1 down

By Steve Ulfelder

Most company Web sites encourage customer feedback. That generates a lot of E-mail. Who's answering that mail, and what kind of job are they doing? We're sneaky. We checked.

# operators are standing down

CONTINUED FROM PAGE 37

## at long last

Four hours after I reseed my query to Ask Betty, my PC bings with new mail. I nearly weep with relief. Betty has replied as I knew in my heart of hearts she would — promptly, efficiently, reliably. I picture her wiping her hands on her red-and-white apron, busy but never too busy to help, while she tells me:

"I'm sorry to hear the chocolate-chip cookies haven't been turning out the way you would like them to be." Betty briskly runs through cookie-sheet facts, causes of doughiness, causes of burnt edges. I know I could count on Betty.

But wait. She's not done: "As far as a tactful way to pass this advice along, why don't you offer to bake the next batch with your wife. I've always felt that time in the kitchen is a romantic addition to any marriage."

Oh my. Am I mistaken, or did Betty Crocker just offer me advice on my love life? Let's see an artificial intelligence application try that. □

*Ulfelder is Computerworld's senior editor. In Depth. His Internet address is stve\_ulfelder@comp.com.*

**So,** the Einsteins over in marketing finally added a drop-us-a-line button to the Web site. Now your organization has a growing stack of E-mail addressed to no one in particular, and marketing has magnanimously nominated you to deal with it. What to do?

E-mail routing and answering software is just emerging. Mark Levitt, an analyst at International Data Corp. in Framingham, Mass., says "that market has just popped up in the last several months." He says the following three vendors and products are leaders in the field:

**Brightware, Inc.'s Brightware I.B.** The Novato, Calif., company's high-end product (prices start at \$95,000) is an artificial intelligence application that reads and replies to E-mail. Once the user sets rules in a database, Levitt says, "no human is involved."

**Mustang Software, Inc.'s Web Response Internet Message Center.** This Java application, which costs \$1499, distributes E-mail to response-center workers. Mustang is based in Bakersfield, Calif.

**EgoTech's WebLeader II-Matheson.** New York-based EgoTech targets the low end with this \$99.95 Lotus Development Corp. Domino-based application, which routes messages within an organization based on the content of those messages.

Those products attack the problem in different ways.

Brightware automates as much as possible. Levitt says Mustang's distinguishing feature is its receipt and tracking capabilities, which let managers monitor performance and distribution. The EgoTech package excels at distributing E-mail throughout an organization without requiring a human reader.

Vendors also are working on ways to merge Internet and telephone inquiries. Two methods are emerging: The Web-based telephone call and the "call-me" button.

In a Web phone call, users with the right software could click a button on a Web page to initiate a call. Assuming the caller had only a single phone line, a slice of bandwidth would then be devoted to voice while the user stayed on the Web.

The customer representative who took the call could then share and even control the user's browser — a tremendous help for transactions such as catalog purchases.

The Web-based phone call has two downsides: It requires Web-calling software, and splitting bandwidth between voice and browser leads to a low-quality connection.

The other method, a call-me button, would be less bur-

densome to consumers. They would click the button, enter their phone number and wait for a customer representative to call them back.

The drawback here is that — again assuming a single phone line — users would have to log off the Internet to take the call.

Consultant Martin Prunty says Boca Raton, Fla.-based Netpeak Corp. is an early leader in Web-calling software.

Versatility, Inc. in Fairfax, Va.; Spanlink Communications, Inc. in Minneapolis; AnswerSoft, Inc. in Richardson, Texas; and Edfify Corp. in Santa Clara, Calif., are other players in call-me tools.

In addition to evaluating those and other products, information systems may need to act as the voice of moderation between those in the organization who are eager to put up a Web mailbox but may not be committed to supporting it and phone-centric call centers, which may resist adding E-mail to their queue.

According to Forrester's David Cooperstein, "IT should be figuring out the simplest way to do this stuff. They should be getting marketing and the operations people together."

—Steve Ulfelder

**H**ere's how the companies contacted fared in response time. Experts consider 24 hours the maximum acceptable time. Beyond that, consumers may grow hostile.

COMPANY	HOURS
Amoco	161*
General Mills' Betty Crocker division (first try)	No answer
Coca-Cola (first try)	No answer
Du Pont	23.75
General Electric	0.5
Hilton Hotels Corp.	63
J. Crew Group, Inc.	18.75
L. L. Bean	20
Mobil	No answer
Procter & Gamble Co.'s Clearasil division	33
State Farm Insurance Cos.	120.5
US Airways Group	No answer

\* Apologized for late reply, said it was due to typo in E-mail address.

\*\* Autoreply. Received answer to query six hours later.

\*\*\* Autoreply. Received form letter via U.S. Mail two days later.

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## IT Careers

YEAR 2000:

# Opportunity in

► Year 2000 projects are expected to hamper IS staffs and budgets next year and

## Opportunities: Not just for Cobolers anymore

If there's a shortage of Cobol programmers, Dave Kelble, manager of Wawa, Inc.'s year 2000 conversion project, isn't losing sleep over it.

With the help of six consultants at Keane, Inc. and two additional staffers at the \$1 billion food retailer in Wawa, Pa., Kelble boasts he's "got the programmer side nailed."

But Kelble isn't quite ready to declare victory. He still needs to find a test expert, a resource likely to become increasingly scarce as companies follow Wawa into the renovation phase of their year 2000 projects.

If you're in the job market, take note: Testing specialists are just the tip of the iceberg. The year 2000 — an estimated \$300 billion to \$600 billion problem — will affect not only legacy systems but also packaged software, customized applications in the business units and embedded systems in equipment and buildings. During the next year, analysts say, companies will compete fiercely for quality-assurance folks, fourth-generation language programmers and superhuman project managers to get them over the hurdle.

If you fit one of the following profiles, a date-conversion project could launch your career into the next century.

### Inquisitive recent college graduates:

Companies such as Atlantic Energy, Inc. need people to survey business areas and create a database of all systems that will be affected by the year 2000 date change.

"If someone came to me and said they would do that, they would get almost a rotational assignment off the bat," says Chris Arena, year 2000 project manager at Atlantic Energy, a \$1 billion utility in Pleasantville, N.J. "In a short time, you could learn more about a company than most people learn in seven years."

### Out-of-date developers:

People who know MVS, RPG and a host of older fourth-generation programming languages are about to become very hot properties, say consultants at year 2000 service companies.

### Retired information systems professionals:

Companies are turning to the people who best

know their custom systems for short-term, highly lucrative work.

### Packaged software experts:

Companies that replace their systems rather than renovating their code will be desperate for people who know commercial software applications from companies such as SAP AG, The Bazo Co., Oracle Corp. and PeopleSoft, Inc., says Jim Woodward, senior vice president at Cap Gemini America, a New York-based consultancy with \$3.4 billion in revenue and 190 year 2000 clients.

### Project managers:

These people can practically name their price — as long as they're willing to take on the largest project management challenge in history.

"All of a sudden, people from middle ranks are dealing with CEOs, executives and legal staff," says Stephanie Moore, a senior analyst at Giga Information Group, a Cambridge, Mass.-based information services company. "They are making great contacts not only with high-level executives from their own companies but in other companies as well."

## Whatever it takes (whatever that is)

When the Dallas-based Center for Quality and Productivity surveyed 300 of the largest year 2000 service providers, it said there is adequate staff capacity — at least for the moment. But of the six service providers we spoke to, not one said they had the resources they needed.

In April, Howard Rubin, chairman of the computer science department at Hunter College in New York, surveyed 113 corporate IS directors, plus managers at Cap Gemini, about their state of readiness for the year 2000. Here's what he found:

■ Fewer than one in eight have a full-fledged strategy for dealing with the date conversion change.

■ Only 18% have a detailed conversion project plan. Of those respondents, 87% said they plan to outsource assessment and conversion.

■ 45% plan to hire additional staff. Of those, 88% expect it to be difficult to find that staff.

■ 97% said cost wasn't an issue.

■ 76% expect date conversion work to increase to between 20% and 40% of the total IS budget during the next three years.

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# Adversity

bolster careers in the process

BY NATALIE ENGLER

## Staffing: More than the golden handcuffs

**S**o, you say your project is fully staffed. Well, you aren't out of the dog house yet.

"Systems integrators are stealing people from corporate America and from one another," says Matt Hotle, research director at Stamford, Conn.-based research firm Gartner Group, Inc.

"And it isn't just systems integrators you have to watch out for. 'One large bank had an excellent year 2000 project manager on the project for two years,'" says Stephanie Moore, an analyst at Giga Information. "A competing bank hired her away at two and a half times her salary. It's a very large problem."

The only way companies can attack it "is with the golden handcuffs or by creating an environment where people want to stay," says Joe Gottlieb, executive vice president and analyst at Stamford, Conn.-based research firm Meta Group, Inc.

Many are offering end-of-project bonuses of as much as \$50,000 in addition to spot bonuses and milestone rewards. Companies such as The Prudential Insurance Company of America have a human resources executive working with business groups to implement a year 2000 human resources strategy. Others are thinking about part-time, flexible and work-at-home opportunities as well as more touchingly, freely rewards that include luncheon or the chance to commute in the company limousine.

But throwing money at people is never enough, says David Foote, a managing part-

ner at another Stamford-based consulting firm, Cromwell Partners LLC. "Over time, the issue is not how many fingers you can stick in a dike. You have to change the whole concept of how you pay people. And you can't do that without making a cultural shift."

Indeed, the two essential ingredients for retaining staff are both closely tied to corporate culture. They are executive support and the promise of an exciting career at the company.

Those are among the main reasons Chris Arena stays with Atlantic Energy, despite the unease he feels as the company undergoes a merger with Delmarva Power and Light Co. in Wilmington, Del.

Six months ago, Arena almost left the electric utility. But he stopped and asked himself, "What happens to me after the year 2000?" Then he decided: "I don't want someone to take me on and cut me loose in two years. I don't want to worry about where I will be."

Sue Kozik, vice president and chief technology officer (CTO) at Penn Mutual Life Insurance Co. in Hortham, Pa., has lost only one year 2000 project

worker — including consultants — since the company began its project last year. The low turnover could very well be attributed to Kozik's constant reminder to people to "think about the visibility you are getting. We would be foolish not to use you for other mission-critical projects."

Kozik credits the strategic importance of the project. "The president is out there thanking people for the work they are doing," she says. "That goes a long way."

Irene Dec, vice president of corporate information technology and Prudential's year 2000 program manager — a program with about 100 million lines of code requiring renovation — agrees that high-level support was a key reason she accepted the job. "I doubt I would have accepted the position if there was not the executive commitment," she says. She adds that to do so would be like trying to climb a mountain without a rope.

Some other managers are taking unusual approaches to staffing from the start. Arena, for example, decided to bypass outsourcing and consulting firms when he was looking for people to

renovate his company's languages — including Cobol, Cobol II, IMS, CICS and assembler — and its databases and other applications. Instead, he recruited four people he'd encountered at previous jobs.

How did Arena persuade them to leave their jobs and work for him? For starters, he rented an office that cut their commute by half. He gave them each a one-year contract — soon to be extended by two years. And he included them in strategy-setting sessions early on. Then he let them work independently in a casual environment away from day-to-day, maintenance and much supervision.

"People have tried to steal them for at least \$10 an hour more than they're making," Arena says. But he says they stay because of the quality of their work lives. "They get to work close to home with little supervision, and they see that we are making progress."

Arena says he feels the same way. "I want to put it down in the record books that I've been successful on a major project like this," he says.

American Bankers Insurance Group, Inc. in Miami took a different tack to hiring. "We haven't singled out the year 2000 problem," says Michael Ray, executive vice president of the information services department. "We try to tell people there is life after the year 2000. That has helped because people are coming here for a career, not a job."

Ray's advice boils down to this: "IS departments have to recognize that their No. 1 job is human resources management."



Chris Arena



David Foote



# YEAR 2000: Opportunity in Adversity

CONTINUED FROM PAGE 101

## Project managers: Year 2000 superheroes

**T**he sexy jobs, the ones that will really limit us, are the project management jobs. We don't have a lot of people with experience managing hundreds of thousands of people," says Ken Orr, president of The Ken Orr Institute in Topeka, Kan.

Indeed, the project manager's role is pivotal. "Good ones can save their companies millions," says Susan Yule, vice president at the Eliassen Group in Cambridge, Mass.

Bad ones, on the other hand, are

"the key point of failure for year 2000 projects," says Matt Hodge, research director at Gartner Group.

The job can be a tough sell, however. "You have to sell it as the largest maintenance project in the history of this business," says Sue Kozik, vice president and CTO at Penn Mutual.

The scope of the project is so huge, there aren't many people who can get their arms around it, cautions Stephanie Moore, a senior analyst at Giga Information. It requires someone who can manage an enterprise-wide project with a drop-dead deadline; estimate schedules and execute a plan; hire and supervise technical resources; end users and consultants; manage multiple moving

parts; diagnose the problem across heterogeneous systems; and take responsibility for 20% to 40% of the IS budget. If you possess that rare combination of skills, the rewards can be staggering. Some year 2000 project managers make as much as

\$500,000, with a \$200,000 completion bonus. Moore says. What's more, Kozik says, "it's a wonderful feather in your cap to be able to say, 'I have extensive experience managing vendors in a complex strategic project for my corporation.'"

### UPPING THE ANTE

Next year and beyond, as companies move into the renovation phase of conversion projects, average base salaries projected for year 2000 staff show dramatic increases:

95-96 BASE SALARY	96-97	2000
Meta Group estimates	25% to 35%	40% to 60%
Gartner Group estimates	20%	20% to 50%

## Looking beyond 1998: The drain, the pain

**A**nyone who's ever had a flat tire knows the feeling. One minute you're zooming down the highway, the window open, your hair blowing in the wind. The next, you're thawumping along the breakdown

lane, praying you make it to the next exit.

Welcome to the year 2000 problem, a dilemma that Ken Orr says is going to "suck the air out of the software business."

During the next year or so, the date change is likely to hit companies with a POP, followed by a giant *hiss* as managers realize they don't have the staff to patch the hole.

Almost half of the 113 corporate IS directors and managers in-

terviewed by Howard Rubin, chairman of the computer science department at Hunter College, said they plan to hire additional staff for their year 2000 projects. And of those, 88% said they expect it to "be difficult" to find that staff.

"Near impossible" is more like it. The demand for skilled professionals already exceeds the supply.

More than 200,000 projected IS jobs go unfilled every year, according to Meta Group, and the year 2000 problem only exacerbates that shortage. To date, says David Foote, managing partner at Cromwell Partners, "people have desperately underestimated their need for staff."

As a result, most companies will end up shelving projects until the crisis is abated. That will likely have a ripple effect on both IS and non-IS staffers alike. In the near future, Orr says, "a lot of highly trained, advanced client/server, object-oriented people are going to have trouble getting jobs if they are not willing to work on this problem." At the same time, raiding will create corporate dissension and unease, Foote says. "Project managers will lose a third of their people, causing rifts and morale issues," he says.

"People are going to have to triage," agrees Bert Russo, vice president of legacy management at CSC Consulting, Inc. in Lexington, Mass. The ability to abruptly and constantly shift priorities "is a rigorous management that people are going to have to face up to," he says. And it's a practice that "historically, companies haven't been very good at."

In other words, do the best you can with the staff you've got — and brace yourself for a bumpy ride. □

Engler is a freelance writer in Cambridge, Mass.

### WHAT'S ALL THIS EXTRA HELP GOING TO COST?

The approximate per capita effort and costs for year 2000 conversion work, in terms of projected man-months and costs between 1996 and the end of the century

INDUSTRY	Man-months	PER CAPITA COST*
Military	9.55	\$71,591
Insurance	5.00	\$46,000
Communications	4.24	\$42,353
Federal	5.33	\$42,133
Retail	5.50	\$41,250
Wholesale	5.18	\$38,824
States	5.00	\$38,500
Services	4.44	\$35,556
Municipal	4.00	\$35,000
Finance	3.00	\$33,000

Source: Capgem, Jones, Software Productivity Research, Burlington, Mass.

### IT CAREERS INDEX

#### STAFFING UP FOR YEAR 2000

Perhaps because of expectations for year 2000 work, the projected increase in permanent IS staff over the next three months rose sharply in the past month, from 2.3% to 2.7%. The 12-month projections for permanent staff hiring also rose.

	Within 3 months		Within 12 months	
	Permanent	Temporary	Permanent	Temporary
Increase in IS staff	2.7%	11.8%	1.5%	NA
Managers increasing staff	23.4%	9.9%	24.5%	7.7%
Managers decreasing staff	NA	NA	2.4%	4.9%
Managers maintaining staff levels	NA	NA	73.1%	87.4%
Current staff mix	Permanent 89.6%		Temporary 10.4%	

Base: 100 IS managers  
NA=not available













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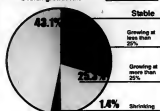
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## Career Survey: Telecommunications

**Industry Hiring Trends**  
Overall growth rate

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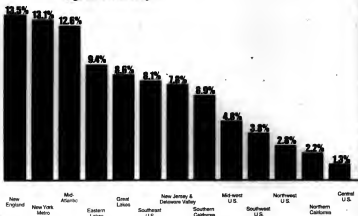


Survey Base: 255 Technology Firms marked in Telecommunications Service

Survey conducted between June '97 and August '97.

CompTech is a directory publisher in Watum, Mass. tracks the U.S. 45,000 technology manufacturers. This survey reaches to the 31,042 tracked firms with fewer than 1,000 employees.

### Regional Growth Analysis





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## Career Survey: Telecommunications

### Industry Hiring Trends

Overall growth rate



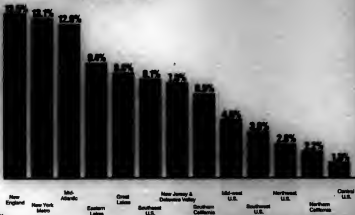
Survey Based: 205 Technology Firms Involved in Telecommunications Software

Survey conducted between June '97 and August '97.

CompTia, a directory publisher in Whitman, Mass., tracks the U.S. 48,000 technology manufacturers. This survey relates to the 37,642 listed firms with fewer than 1,000 employees.

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The developer of this resource is 15 year technology pro Kevin L. Hess. Hess states, "The most pressing subject technology managers face today trying to keep up with rapid change, the Internet and Year 2000 problems is information security...pro-

fessionals responsible for computer systems in their organizations do not have available resources to reference in order to learn about computer security threats and solutions. This manual combined with the Security Resource CD will provide the IT professional with the information and resources needed to develop their own information systems security strategies in their respective organizations." The Information Professionals Guide to Information Security and the Security Resource CD is available for \$49 plus \$40 shipping in the continental U.S. Credit card orders can be placed by calling Technology Advantage at (248) 443-9605. VISA, MasterCard and American Express are accepted. For more information and additional ordering information visit <http://www.technologyadvantage.com>.

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	PERCENT		PERCENT
CompuShare Software	+60.0	Sequent Computer Sys.	-6.3
Thomson Corp.	+49.0	Centel Corp.	-5.7
Intellectual Edge	+21.0	Virtual Computer Int'l	-5.7
Amicus comm.	+20.4	Perceptics Systems Inc.	-5.4
Open Market Inc.	+18.3	Revere Inc.	-5.0
CompuShare Communications	+15.0	Revere Inc.	-5.0
MTI Technology Corp.	+14.9	Sequent Computer Sys.	-6.3

	DOLLAR		DOLLAR
Yahoo Int'l Inc.	\$1.26	Stratus Computer Inc.	-\$0.75
America On-Line	1.20	WorldCom Inc.	-\$0.64
CompuShare Software	1.20	WorldCom Inc.	-\$0.64
CompuShare Software	1.20	WorldCom Inc.	-\$0.64
CompuShare Software	1.20	WorldCom Inc.	-\$0.64
CompuShare Software	1.20	WorldCom Inc.	-\$0.64
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## INDUSTRY ALMANAC

## WorldCom thinks big

**A**mid the hullabaloo surrounding the merger between CompuShare Corp. and America Online, Inc. stands WorldCom, Inc. (NASDAQ:WCOM), the Jackson, Miss.-based long-distance telephone and data communications provider that helped America Online offer the whole package.

When the deal settles, WorldCom will hold both CompuShare's and America Online's lines, modems, points of presence (POP) and network services. CompuShare's business network services division will let WorldCom offer its customers business services that it couldn't before.

Industry analysts say each of these features is a key to WorldCom's long-term strategy. "They had to continue to add to their spread of offerings in order to grow," says Uric Wick, an analyst at investment firm Friedman, Billings, Ramsey Co. in Arlington, Va. "The addition of more POPs and lines around the world will benefit them immensely."

Dan Merriam, an analyst at Ciga Investment Group in Stamford, Conn., says WorldCom—like MCI Communications Corp.—is focused on covering the data-centric business market.

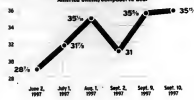
"With the new services they get from CompuShare, like transaction processing, managed virtual private networks and remote LAN access services, they have a lot to offer business customers," Merriam says.

David Takata, an analyst at Grunthal & Co. in Beverly Hills, Calif., says WorldCom and MCI—in contrast with AT&T Corp. (NYSE:AT) and Sprint Corp. (NYSE:S)—have both seen the chance to be major data communications access providers.

"AT&T's behind here. They still seem more interested in providing telephone service than they are in the Internet," Takata says. Sprint's router-based business has problems scaling to stay competitive, he says.—Stewart Deck

## DEALMAKER DOLLARS

WorldCom's stock price jumped following the Sept. 8 America Online/CompuShare deal



Source: Dow Jones & Co.

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# The Week in Stocks



## WorldCom thinks big

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When the dust settles, WorldCom will hold both CompuServe's and America Online's lines, routes, points of presence (POP) and network resources. CompuServe's business network services division will let WorldCom offer its customers business services that it couldn't before.

Industry analysts say each of these features is a key to WorldCom's long-term strategy. "They had to continue to add that kind of offerings in order to grow," says Mike Gill, an analyst at Investment Resources Partners, LLC, in Arlington, Va. "The addition of some POPs and then around the world will benefit them immensely."

Das Meritum, an analyst at Citi Information Group in Stamford, Conn., says WorldCom — the MCI Communications Corp. — is focused on covering the data-centric business market.

"With the new services they get from CompuServe, the international provisioning, managed private networks and remote LAN access services, they have a lot to offer business customers," Meritum says.

David Tabin, an analyst at Grout & Co. in Beverly Hills, Calif., says WorldCom and MCI — in contrast with AT&T Corp. (NYSE:ATT) and Sprint Corp. (NYSE:S) — have both added the chance to be major data communications access providers.

"AT&T's behind here. They still seem more interested in providing telephone services than they are in the Internet," Tabin says. Sprint's customer network has problems scaling to stay competitive, he says. — Stewart Duck

## DEALMAKER DOLLARS

WorldCom's stock price jumped following the Sept. 8 America Online/CompuServe deal



Company	Symbol	Price	Change	52-Week High	52-Week Low	Dividend	Yield	Market Cap	Volume	Open	High	Low	Close	Net Income	EPS	P/E	Div. Payout
ADT	ADT	48.00	0.00	51.00	45.00	0.00	0.00	1.5B	1.5M	47.50	48.50	47.00	48.00	1.50	0.50	15.00	100%
ADT	ADT	48.00	0.00	51.00	45.00	0.00	0.00	1.5B	1.5M	47.50	48.50	47.00	48.00	1.50	0.50	15.00	100%
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ADT	ADT	48.00	0.00	51.00													





## COMMENTARY

# All your gadgets soon will be in sync

David Coursey

**O**n one side of my desk sits the charger for my cellular telephone. On the other is the docking cradle for my Palm Pilot. If I need to make a call, I order up the number from the Pilot and manually dial it into the cellular phone.

The two devices can't share information, and I'm loath to enter one set of numbers into each of the dozen or so phone books that my devices and applications use.

That's about to change. A technology convergence is afoot, and unless it gets hopelessly off track or Steve Jobs gets involved, a variety of devices soon will be able to share calendaring, scheduling and directory information. That major advance should push group calendaring and personal information managers into the mainstream. Here's a preview:

**Synchronization becomes easy.** My friend Philippe Kahn has been sending his post-Boatland days at Starfish Software inventing technology for keeping calendars and schedules fully synchronized. The True Sync system uses a serv-

er in which all manner of devices — personal digital assistants (PDAs), desktops, phones and cellular phones — connect to exchange information. The server handles conflicts and uses a modular architecture that lets it support new devices as they're developed.

Better devices emerge. The only Windows CE devices worth having is the Philips Velo. And even that is a conditional endorsement. Windows CE devices are perhaps the best PDAs developed so far, with the possible exception of anything from Psion — but that isn't saying much. Microsoft is working hard to improve

this, but when a decent and affordable screen will appear on a Windows CE machine remains in question.

Early next year should bring the arrival of the Microsoft-based "Pilot killers," code-named Gryphon. Those will be in the Pilot functionality and size class, but the "killer" part may not be necessary. There are convincing rumors that iCom

doesn't want to be in the consumer electronics business and may either sell off the Pilot line or let the product run its course without many future upgrades.

The rage this fall could be another Philippe Kahn development: a PC Card organizer being sold by Franklin Electronic.

Publishing under Rolodex Electronics, I've done a day of consulting with the Franklin people on this product, so rather than take my word for it, read *Wall Street Journal's* recent column in *The Wall Street Journal*. He was lavish in his praise.

**TCPIP cellular phones hit the market.** How would the phone be different if every

cellular phone or other wireless device had its own TCPIP address? "Vastly different" is an understatement. Given different, all those devices would be sitting on the network — even while in sleep mode — immediately able to share information. Applications wouldn't have to worry about the pipeline, just what lives behind the TCP stack at the other end.

Cellular phones and wireless gizmos also are getting smarter. My hope is the hardware OEMs and service providers will get together and agree on some application programming interfaces and operating system standards so third parties can easily build applications that can live on those ultrathin clients.

Those developments, along with others, have led me to believe my personal information manager, PDA, cellular phone, pager and all my other road warrior tools will soon be able to remain in lockstep.

And they'll be much more useful than what I have in my briefcase now. □

*Coursey, an analyst and consultant, is editor of "coursey.com," an online newsletter available at [www.coursey.com](http://www.coursey.com). His E-mail address is [david@coursey.com](mailto:david@coursey.com).*

# The 21st-century paradox

David Moschella

**P**erhaps the thing most often said about business in the next century is that we will enter both the Age of Information and the Age of Asia. Those slogans for the next millennium are repeated so often, they are often taken as fact.

But think about it. The use of computers throughout Asia is generally far behind that of the West, so how can both those visions be true? That thought runs through my mind as I watch the daily drubbings of Asian currencies, rising regional interest rates and stagnant Pacific stock prices — especially in Tokyo, where the Nikkei average is less than half what it was in 1989.

Remember in the early 1990s when American business was being pilloried worldwide, and the corporate bookshelves were stuffed with papers to the superiority of Asian — especially Japanese — business ways? You couldn't pick up a magazine without seeing yet another homage to quality circles, consensus management, lifetime employment and keiretsu business ties.

In contrast, U.S. companies were de-

scribed as greedy, shortsighted and far too preoccupied with Wall Street. American workers were dismissed as sloppy, undereducated and disloyal. Similarly, our political leaders were mocked for their allegedly mindless faith in the free market, for standing by while supposedly brilliant Asian bureaucrats set the strategies for the final Pacific triumph. That mood of fear and pessimism helped elect Bill Clinton.

Rarely has conventional wisdom been so completely wrong.

In sector after sector, American business has restored its competitiveness,

and the U.S. economy has become the envy of the world. Why?

There are many factors, but the use of technology ranks high on just about every serious analyst's list. By almost any statistical measure, the use of computers in the U.S. is more intensive than in its economic rivals. Only countries with smaller populations — such as Sweden, Denmark and Australia — can compare.

The U.S. has been the most computer-intensive nation since the beginning of the information industry.

Throughout the '60s, '70s and '80s, that relatively heavy investment seemed to have little correlation with economic competitiveness. Something more than just spending the most money must be at work.

From today's vantage, it's tempting to believe that the U.S. edge is tied to the explosion of the World Wide Web. But serious business use of the Web didn't begin until late 1995, well after the real competitive turnaround had begun.

The Web seems to be accelerating U.S.

gains, but it clearly didn't initiate them. From a technology perspective, the U.S.'s competitive turnaround ironically is most closely correlated with that nonstop buzz term: client/server computing. Corporate electronic mail, groupware, LANs and relational database-driven computing have been most closely associated with the higher speed, focus and efficiency that characterize the revitalization of so many industries.

Evidence suggests that sometime in the early 1990s, decades of investment in enterprise computing reached a critical mass that let serious organizational transformation begin. U.S. business has been on a roll ever since, while most of Asia lags three to five years behind. If anything, the gap is getting wider.

Don't get me wrong. With more than half the world's population, Asia will without doubt play an enormous role in the world's 21st-century economy.

But as of right now, the Age of Information and the Age of Asia remain on very separate and incompatible tracks. □

*Moschella is an author, independent consultant and weekly columnist for Computerworld. His Internet address is [david.moschella@cw.com](mailto:david.moschella@cw.com).*

## The Back Page

## alt.cw

Disparages &amp; rages from the rings of the sector of frontier

## VELCRO TAKES COMPUTING TO NEW HEIGHTS

The fatal flaw of laptop computing is that \$5,000 worth of hardware can slip from the lap to the floor. So Rach, Inc. in Farndale, Wash., developed the Laptop Pedomer Pro carrying case that converts into a leg-bugging work surface. Laptop computing is made secure via a padded leg strap and flat board that connects to the underside of the laptop PC with Velcro. The case and strap-on platform cost \$99.95. The platform alone costs \$49.95.

## The Princess and the PC

It was just a matter of time: Rhode Island Soft Systems has released the Princess Diana Tribute Screen Saver, available for download for free from [www.screensaver.com](http://www.screensaver.com). The 2M-byte Windows screen saver has 21 color photographs licensed from United Press International. The screen saver was created using the firm's Ovation Studio Pro Authoring Tool, a multimedia development product to be released later this year.



## Usenet forums

The following are recent Usenet newsgroup discussion threads found on the Internet. You may be able to pick up the thread by entering keywords at the search engine [www.dejnews.com](http://www.dejnews.com).

- Expert and dummy interfaces ([comp.human-factors](http://comp.human-factors))
- Opinions on Microsoft Transaction Server ([comp.client-server](http://comp.client-server))
- Avoiding bogus encryption products ([comp.security](http://comp.security))
- Working conditions and programmer productivity ([comp.human-factors](http://comp.human-factors))
- Report on an 18-month study of Lotus Notes/Domino ([comp.groupware](http://comp.groupware))
- Frame relay vs. ISDN ([comp.dcom.frame-relay](http://comp.dcom.frame-relay))

## Inside Lines

## NOISE pollution

Who says Microsoft and Netscape can't agree on anything? They both apparently like the acronym NOISE, which stands for "Netscape, Oracle, IBM, Sun and Everyone Else." During a strategy presentation last week in Mountain View, Calif., Netscape co-founder Marc Andreessen noted that Microsoft used the term at a recent analyst briefing. "We like it. We decided we'd start using it. We think it's a compliment," he said. Now the favorite slide in Andreessen's product presentation package contains the phrase: "NOISE is getting loud; partnership to advance Java and CORBA."

## Middle of the Sphinx ship date

Microsoft is once again hedging on the delivery schedule for its enterprise-oriented SQL Server 7.0 database. Code-named Sphinx, the database originally was due this year but got bumped back to the first half of next year several months ago. Company officials aren't ruling out shipments by the middle of next year, but they said that depends on how smoothly things go with a second beta-test release scheduled for the first quarter. That will add support for Windows 95 and parallel querying — two key features that didn't make the first beta cut.

## Do as I say, not as I do...

Microsoft's lawyers were busy last week, although they weren't exactly consistent. First, Microsoft, along with its Win32 buddies Intel, Compaq and Digital, asked bitter rival Sun Microsystems to give control of Java to an international standards body. The vendors said with straight faces they're concerned that Sun, which developed and owns Java, has too much control over the language. At the same time Sun Win32 was urging Sun to cede control of its most valuable weapon in the battle against Microsoft, Bill Gates' legal battles were cracking down on third-party vendors that used "Windows NT" or "NT" in their names or on their Web sites.

## We gotta get out of this place

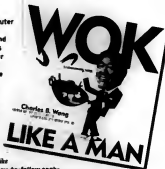
For some reason, many of the vendors that had hospitality suites at Gartner Group's CFP '97 conference last week appeared to be trying their darndest to make attendees forget everyone was in Chicago. Tandem Computers had a Mardi Gras theme; NCR promised a virtual trip in the Kentucky Derby; and Silicon Graphics and Siemens Minder both went with West Coast motifs. Only Data General gave the Windy City its due by serving up some local hotwings. Digital Equipment and Symantec took the easy way out by not paying up the money for hospitality suites — a fact they were on doubt thrilled to see trumpeted on the list of what their rivals were offering to purchased partygoers.

## Beta cycles for bug fixes

Microsoft has begun work on Service Pack 4 for Windows NT 4.0 — its fourth enhancement/bug fix package for the operating system in the past nine months. In January, Microsoft released Service Pack 2, which created more bugs than it solved and caused major system crashes. Microsoft now is putting the packs through a beta-test cycle. A source close to Microsoft said SP4 should ship by December. "But even though Microsoft has pledged to not have a repeat of the SP4 debacle, users can choose the unilateral option to roll back the changes in case they encounter any bugs," the source said.

When The Sabre Group recently signed a letter of intent with US Airways for a multi-billion-dollar IT outsourcing arrangement, the company sent out the obligatory press release heralding the deal. But Sabre may have gotten a tad carried away when it paraphrased an analyst as saying that the agreement would "possibly hurdle US Airways to the forefront of innovative IT solutions." We think they meant "hurtle." If you have properly spell-checked news tips to share, send them to news editor Patricia Keefe at (303) 820-8183 or E-mail her at [patricia\\_keefe@cw.com](mailto:patricia_keefe@cw.com).

Invita Computer Associates' Chairman and CEO Charles Wang to your next dinner party, and he might just whip up a wok-full of shrimp for you. Wang, an enthusiastic cook, has self-published Wok Like a Man, an easy-to-follow cookbook for Chinese stir-fry fans. The book is sold in CA's employee store for \$30 (\$100 for an autographed version), with all proceeds going to the Make A Wish Foundation.





## The Back Page

## Inside Lines

# altcw

Dispatches & images from the fringes of the tech world

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